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CONTENTS

Intermittent Endurance And Anaerobic Power Ability In Professional Soccer Players

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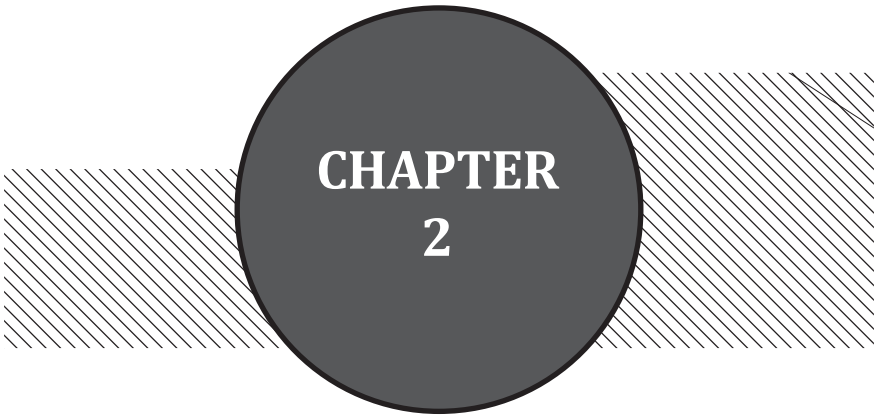
Mehmet Ali ÖZTÜRK[2]



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1. INTRODUCTION

Football, which is one of the most researched team sports in scientific literature (Datson et al., 2014; Stolen et al., 2005), is a sport which uses mainly aerobic system with anaerobic systems with intermittent short dense movements requiring high level of condition as well as high level technical and tactical skills (Boone et al., 2012). Competition analysis revealed that elite football players had a distance of 75% (10-12) km between maximal oxygen consumption (MakSVO2) during a 90-minute match (Dellal et al., 2010; Clemente et al., 2013; Duk et al., 2011). Approximately 40% of this distance consists of high-intensity (> 14.0 km / h) soccer ball or ball-free running and with 1-11% sprint (> 19km / h) (Mohr et al., 2003). Short-range sprint leads to high levels of creatine phosphate (CP) breakdown (Boone et al., 2012). In certain parts of the competition, CP may be reduced by 30% below the resting value, and muscle glycogen stores are significantly reduced at the end of the match (Hugo et al., 2016). When the competition is played, the CP is re-synthesized during periods of lower intensity. This regeneration process depends on the capacity of the aerobic metabolism (MaxVO2) (Spencer et al., 2005). The intensity of training in football is equal to 85% of the maximum heart rate that is close to the anaerobic threshold level (Krustrup et al., 2005). The term "anaerobic threshold" (ANT) is defined as the level of work or oxygen consumption at which metabolic acidosis and associated gas changes occur (Sporis et al., 2009). It is stated that ANT is highly correlated with performance in aerobic activities and is an important indicator in determining physical levels of football players (Al-Hazzaa et al., 2001). Although the dominant energy source in football is the aerobic system, it is claimed that the main determinant actions are provided by anaerobic metabolism (sprint, jumping, shoot, etc.) (Boone et al., 2012). Football, including low and high intensity activities, leads to periods such as lactic accumulation and lactate removal. Lactate concentration in the blood during a football match is between 2-10 mmol / L (Krustrup et al., 2006). For this reason, the aerobic and anaerobic forces and their capacities must be at the optimum level in order for the players to perform at a high level (Boone et al., 2012).

For high performance in football, high intensity activities and frequent completion of repetitive sprints are important (Bloomfield et al., 2007; Bradley et al., 2009). Many tests have been performed to determine the extent to which football players are able to achieve these activities (such as aerobic power, lactate threshold, muscle strength tests) (Svensson et al., 2005). One of these tests is the Yo-yo Intermittent Recovery IR2 and IR1 test which is one of the most applied tests. The Yo-yo test is a specific and practical test used to measure the ability of players to practice and maintain repetitive high intensity exercises (Bangsbo et al., 2008). Heart rate and oxygen consumption increase regularly during the test. For this reason, both tests stimulate the aerobic system at maximum level. The biggest difference between them is the degree of further activation of the IR2's anaerobic system. During both tests, glycogens in the muscles are reduced by 9% to 23%. Especially after the Yoyo IR1, nearly 14% of the muscle fibers are almost empty (Krustrup et al., 2006; Bangsbol et al., 2008). The test consists of regularly increasing speed, 20 m shuttle runs and 10 m active rest period. The test consists of regularly increasing speed, 20 m shuttle runs and 10 seconds of active rest period and continues until the players cannot keep up with the required speed. The Yo-Yo IR1 consists of four running bouts at 10–13 km/h, seven at 13.5-14 km/h and thereafter stepwise 0.5 km/h speed increments every eight running bouts (Ingebristen et al., 2012).

Therefore, the purpose of this study was to compare the anthropometric characteristics, Yo-Yo intermittent recovery level 1 test (Yo-Yo IR1), vertical jump (CMJ), sprint speed (10 m, and 30 m) performance of Turkish professional soccer players by level of competition. In order to compare differences, data were collected from first and second league players.

2. MATERIALS AND METHODS

2.1. Experimental approach to Problem

This study was designed as a cross-sectional study. Soccer player who participated in this study included of professional soccer players in the Turkish National League. Test sessions included athlete's personal information, injury histories, anthropometric measurements, aerobic, and anaerobic ability.

2.2. Subjects

Two male professional Turkish soccer teams participated in the study. One of the teams competed in the First National League in the study (FNL; n= 21), and the other team played in the Second National League (SNL; n= 17). To be over 18 years of age, active and healthy players were determined as inclusion criteria. Approval of the Health Sciences Research Ethics Committee of Uşak University was received before prior to the study and the athletes were informed about benefits and risks before participation and signing volunteer consent form.

2.3. Experimental Protocol

All measurements were performed in the preseason. All tests were completed at one session on the pitch. Before the measurements, athletes were warned of refrain from strenuous exercise 48 hours before. All subjects had familiarity with all tests, and were wearing a standard soccer kit. The experimental protocol consisted of anthropometric measurements (body height, body weight, and body fat percentages), countermovement jump (CMJ), sprint speed (10-30 m), and Yo-Yo IR1 tests. Each player was verbally encouraged during tests.

Anthropometric Measurements: The body height (± 0.1 cm) (Holtain) and body weight (± 0.1 cm kg) (Angel) of players were determined bare foot and shorts and tshirts before the tests. Percentage body fat was estimated by skinfold caliper using the four site method (Durnin & Wormersley, 1974). The body mass index (BMI) was determined with formula of "Body Weight (kg)/ Body height (m)2".

Anaerobic Power: In order to evaluated players' anaerobic power, sprint (10-30 m) and vertical jump test (CMJ) were used. Prior to testing, each subject underwent a 10 min warm-up consisted of 5-min jogging and dynamic stretching by coaching staff. Sprint speed performed on the pitch with a photocell stopwatch system. The first, second, and third timing gates placed in the order of 0 m, 10 m and 30 m, respectively from the starting line. While 10 m gives the acceleration criterion, the measured time of 30 m considered as the maximum sprint rate (McFarland et al., 2016). A 5-min recovery period was given between trials. The fastest of 3 trials was used for statistical analysis. The CMJ performance of the athletes was measured by Smart jump (Jump/Timing Device). For practice and special warm-up, all players were allowed to perform submaximal CMJ trials (2–3 repetitions). All the athletes were asked to sit on a mat, their hands on their buttocks and to jump as high as possible when ready. The athletes, their hands on their hips and in an upright stance, rapidly collapsed downward and jumped to the maximum attainable height without pulling their knees upward while maintaining stretched legs. Resting intervals of 2 min were applied to reduce possible tiredness. The time indicator started to work with the accuracy of 0.001 seconds at the moment the participants were on the jumping platform, and the contact of their feet with the floor was lost. The time was stopped when the participant landed back on the platform, and the airborne duration of the participant was determined. Measured jump height was recorded in centimeter. The best of the 3 trials was used in the statistical analysis.

Yo-Yo intermittent recovery level 1 test (Yo-Yo IR1): This test includes 2 X 20-m shuttle runs at progressively increasing speeds, controlled by an automatic bleep from a tape recorder. Subjects have a 10-s active recovery period between each running bout. This area represents the active recovery zone consisting of 2x5-m of jogging or walking. It was decided to stop the test when a subjects twice have failed to reach the finishing line in time and the distance covered is recorded (Krustrup et al., 2003). After the test, differences in test performance, maximal heart rate, maximal oxygen uptake and running distance were obtained.

VO2max was calculated by the following formula;

Yo-Yo IR1: VO2maks (ml/min/kg) = IR1 distance (m) X 0.0084 + 36.4 (Bangsbo et al., 2008).

Heart rate was recorded by a Polar RS 400 placed around the chest for continuous heart rate recordings end of the test (Bradley et al., 2011).

3. RESULTS

	Total (n= 38) (x ± SD)	FNL (n = 21) (x ± SD)	SNL (n = 17) (x̄ ± SD)	p	MD ± SD [%95 CI]
Age (years)	25.1 ± 2.9	25.5 ± 3.1	24.7 ± 2.7	0.450	0.7 ± 0.9 [-1.1 – 2.7]
Height (cm)	180 ± 0.05	180.6 ± 0.5	179.5 ± 0.5	0.586	0.9 ± 0.1 [-0.2 – 0.4]
Weight (kg)	74.9 ± 6.4	74.9 ± 7.1	75.0 ± 5.6	0.659	-0.1 ± 2.1 [-4.3 – 4.3]
BF (%)	11.8 ± 1.3	11.9 ± 1.4	11.7 ± 1.4	0.445	0.2 ± 0.4 [-0.7 – 1.1]
BMI (kg/m^2)	23 ± 1.4	22.9 ± 1.7	23.2 ± 1.2	0.587	-0.3 ± 0.4 [-1.2 – 0.7]
CMJ (cm)	40.4 ± 3.7	41.1 ± 4.6	39.5 ± 2	0.428	1.6 ± 1.2 [-0.9 – 4]
Yo-yo IR1 (m)	1703 ± 789.5	2293 ± 552.7	974 ± 194.3	0.000*	1319 ± 140 [1033 – 1604]
Est. $MaxVO_2$ ($ml.\ kg^{-1}min^{-1}$)	50.7 ± 6.7	55.8 ± 4.6	44.4 ± 1.5	0.000*	11.3 ± 1.1 [9 – 13.7]
Yo-Yo IR1 – Peak HR (bpm)	188.7 ± 8.5	189.3 ± 7.7	188 ± 9.5	0.702	1.3 ± 2.8 [-4.4 – 6.9]
10 m (s)	1.72 ± 0.1	1.64 ± 0.05	1.79 ± 0.01	0.000*	0.15 ± 0.02 [0.1 – 0.2]
30 m (s)	4.12 ± 0.1	4.07 ± 0.1	4.16 ± 0.1	0.117	0.05 ± 0.05 [-0.01 – 0.1]

Table 1. Comparison of anthropometric characteristics, CMJ, Yo-Yo IR1, Estimated MaxVO2, Yo-Yo IR1– Peak HR, 10 m, and 30 m values of the participants

FNL= First League; SNL= Second League; MD= Mean Differences between two groups; SD= Standart Devition; * p<0,05; CI = Confidence Interval; x̄= Mean; BF: Body Fat Percentage; CMJ: Countermovement Jump; BMI: Body Mass Index; Yo-yo IR1: Yo-Yo intermittent recovery level 1 test; Est. MaxVO2: Estimated maximal oxygen uptake; s: second

Comparison of anthropometric characteristics, CMJ, Yo-Yo IR1, Estimated MaxVO2, Yo-Yo IR1– Peak HR, 10 m, and 30 m values of the participants were given in Table 1.

There was a significant difference between the first league and second league players in Yo-Yo IR1 test, maximal oxygen uptake (MaxVO2) and 10 m sprint values in favor of the first league players at the level of p <0.05 (FNL= Yo-Yo IR1: 2293.3 ± 552.7 m, MaxVO2: 55.8 ± 4.6 ml. kg-1min-1, 10 m: 1.64 ± 0.05 s; SNL=974.1 ± 194.3 m, MaxVO2: 44.4 ± 1.5 ml. kg-1min-1, 10 m: 1.79 ± 0.01 s). There was no significant difference between the groups in terms of 30 m sprint test (p> 0.05) (Table 1).

4. DISCUSSION

A review of the literature has provided that differences in aerobic capacity (Krustrup et al., 2006; Ingebrightsen et al., 2012; Krustrup et al., 2003) and lower extremity power (Rebelo et al., 2013; Kalapotharakos et al., 2006; Bilsborough et al., 2015) are apparent by level of competition in soccer. The aim of the present study was to determine whether the Yo-Yo IR1, sprint speed, and CMJ height performance of professional Turkish soccer players varied according to competitive level. Based on previous studies (Krustrup et al., 2006; Krustrup et al., 2003; Rebelo et al., 2013; Kalapotharakos et al., 2006), it was hypothesized in this present study that Turkish First League players would perform greater Yo-Yo IR1, sprint and CMJ height performance compared to Turkish Second League soccer player. The results of this study revealed that the height, body mass, body height, body mass index, and body fat values of the two groups were not significantly different. With regard to Yo-Yo IR1 performance, the present study demonstrated that covered distance and maximal oxygen uptake (VO2max), and 10-m sprint values were much higher for first league players than did the second league players. The Yo-Yo IR1-Peak HR and CMJ height performance were not different between the first and second league players. Further, the mean Yo-Yo IR1 – Peak HR values were very similar between first and second league soccer players.

The present results demonstrated the first league players performed 1319.2 ± 140 cm (24%) better than did the second league players in the Yo-Yo IR1 test. The Yo-Yo IR1 use to measure the ability to repeat high intensity aerobic work (Krustrup et al., 2006), and to evaluate the performance level of athletes (Bangsbo et al., 2008). It has been stated that the Yo-Yo intermittent recovery test was a valid measure to evaluate of fitness performance in soccer players (Krustrup et al., 2003). The differences in Yo-Yo intermittent recovery test performance of top-class soccer players and the moderate players has been indicated as 2.26 + 0.08 vs 2.04 + 0.06 km, respectively in European team, competing in the Italian league and in the European Champions League. (Mohr et al., 2003). Similarly, Ingebrigtsen et al. (2012), revealed that elite players had higher (25%) in Yo-Yo IR1 performance than sub-elite players. These results are in line with our results that the YYIR1 performances of the present high-level soccer population demonstrated the high level of intermittent endurance capacity when compared with low-level soccer players.

Player's maximal oxygen consumption values (MaxVO2) which obtained from intermittent Yo-Yo IR1, were 55.8 ± 4.6 ml.kg-1min-1 and 44.4 ± 1.5 ml.kg-1min-1 for first and second league players, respectively, in this present study. The first league players had 11.3 ± 1.1 ml.kg-1min-1 better value than the second league players. In some studies, it was stated that the average value of MaxVO2 of international male football players ranges from 55 and 68 ml.kg-1min-1 (Helgerud et al., 2011; Wisløff et al., 1998). Bongsbo et al. (2008) reported that the performance in the Yo-Yo IR tests progressed with an age-related increase. In this current study, there was no significant difference in the mean age between the groups. The training contents can be shown as a reason for this result.

Countermovement and squat jumps are two type of vertical jump and were indicated as a discriminative variable for both male and female soccer players across competitive level (Arnason et al., 2004). On the other hand, Cometti et al. (2001), noted that (VJ) performance was not able to discriminate between competitive levels in national team male soccer players and no competitive level differences in VJ performance were detected in the first division, second division and amateur male soccer players. In the same study, because of national team players constituting a more homogenous sample of players they recommended further studies considering club and national team–selected players are warranted. In our study, no difference was found between first and second league players in the jumping ability, not confirming the findings (Rebelo et al., 2013; Kalapotharakos et

al., 2006; Bilsborough et al., 2015). These studies reported that the teams which were the classified among the best three team of the league, had higher CMJ height performance compared to the middle and last team of the league. On the other hand, CMJ values for the first and second league players of this present study were in consistent with previous research (Arnason et al., 2004; Cometti et al., 2001).

In the speed ability, we found significant differences between first and second league players in the 10 m sprint speed. The ability to accelerate is an important factor in the success of the players during the competition. Acceleration is an important requirement for the ability to reach the ball first and for improvements in the game (Silvestre et al., 2006). Although, Cometti et al. (2001) reported that there were no significant differences between first and second division soccer players in terms of 10 m and 30 m, but first and second division soccer players ran faster over 10 m than the amateur players. In this present study, no significant difference was found between two groups in 30 m sprint performance. In the studies; reported that 96% of the sprint was shorter than 30 meters during a football match (Barros et al., 1999) and spurs from 1 to 5 m and 5 to 10 m form most of the sprinting actions of football players (Bangsbo, 1994). Because of these reasons, maybe 30 m sprint test, is too long a sprinting distance.

In conclusion, the results of our study demonstrated the aerobic and anaerobic performance differences between Turkish first league and second league professional soccer players. We found differences the intermittent endurance and acceleration performance of soccer players across playing level. According these results, it can be said coaches and athletes should consider these aspects in order to improve performance level.

REFERENCES

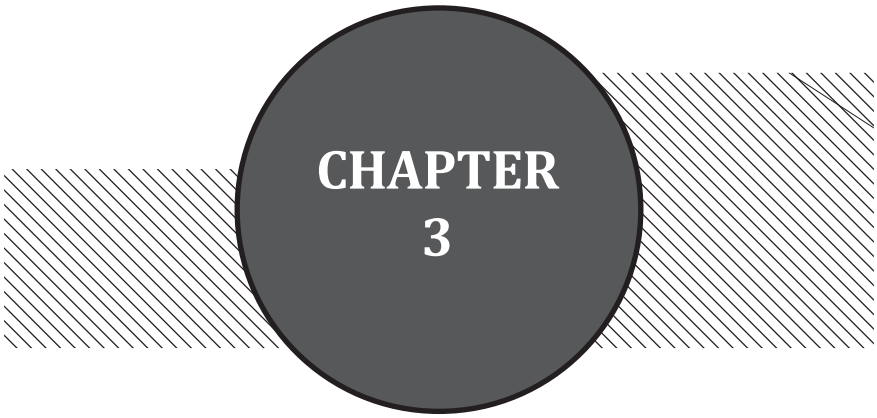
1. Al-Hazzaa, H.M., Alumuzaini, K.S., Al-Rafaee, A., Sulaiman, M.A., Dafterdar, M.Y., Al-Ghamedi, A., & Khuraiji, K.N. (2001). Aerobic and anaerobic power characteristics of Saudi elite soccer players. J Sports Med Phys Fitness 41: 54–61.
2. Arnason, A, Sigurdsson, S. B, Gudmundsson, A, Holme, I, Engebretsen, L, & Bahr, R. (2004). Physical fitness, injuries, and team performance in soccer. Med Sci Sports Exerc 36: 278–285.
3. Bangsbo, J. (1994). Fitness Training in Football: A Scientific Approach. Bagsveard, Denmark: Ho & Storm.
4. Bangsbo, J., Iaia, F.M., & Krustrup, P. (2008). The Yo-Yo intermittent recovery test: A useful tool for evaluation of physical performance in intermittent sports. Sports Medicine, 38: 37–51.
5. Barros, T. L., Valquer, W., & Sant'anna, M. (1999). High Intensity Motion Pattern Analysis of Brazilian Elite Soccer Players in Different Positional Roles. Medicine & Science in Sports & Exercise, 31(5), S260.
6. Bilsborough, J. C., Greenway, K. G., Opar, D. A., Livingstone, S. G., Cordy, J. T., Bird, S. R., & Coutts, A. J. (2015). Comparison of anthropometry, upper-body strength, and lower-body power characteristics in different levels of Australian football players. The Journal of Strength & Conditioning Research, 29(3): 826-834.
7. Bloomfield, J., Polman, R., & O'Donoghue, P. (2007). Physical demands of different positions in FA Premier League soccer. Journal of Sports Science and Medicine, 6: 63–70.
8. Boone, J., Vaeyens, R., Steyaert, A., Bossche, L.V., & Bourgois, J. (2012). physical fitness of elite belgian soccer players by player position, Journal of Strength and Conditioning Research. 26(8):2051-2057.

9. Bradley, P.S., Mohr, M., Bendiksen, M., Randers, M.B., Flindt, M., Barnes, C., et al. (2011). Sub-maximal and maximal Yo-Yo intermittent endurance test level 2: heart rate response, reproducibility and application to elite soccer. Eur J Appl Physiol. 111(6):969-978.
10. Bradley, P.S., Mohr, M., Bendiksen, M., Randers, M.B., Flindt, M., Barnes, C., et al. (2011). Sub-maximal and maximal Yo-Yo intermittent endurance test level 2: heart rate response, reproducibility and application to elite soccer. Eur J Appl Physiol. 111(6):969-978.
11. Clemente, F.M., Couceiro, M.S, Martins, F.M, Ivanova, M.O, & Mendes, R. (2013). Activity profiles of soccer players during the 2010 world cup. J Hum Kinet 38: 201–211.
12. Cometti, G., Maffiuletti, N. A., Pousson, M., Chatard, J. C., & Maffulli, N. (2001). Isokinetic strength and anaerobic power of elite, subelite and amateur French soccer players. International journal of sports medicine, 22(01), 45-51.
13. Datson, N., Hulton, A., Andersson, H., Lewis, T., Weston, M., b. Drust, B., & Gregson, W. (2014). Applied physiology of female soccer: an update. Sports Med. 44(9):1225-1240.
14. Dellal, A., Wong, D.P., Moalla, W., & Chamari, K. (2010). Physical and technical activity of soccer players in the French First League—with special reference to their playing position. Int Sportmed J. 11: 278–290.
15. Duk, O.S, Min, K.S, Kawczynski, A., Chmura, P., Mroczek, D., & Chmura, J. (2011). Endurance and speed capacity of the Korea republic football national team during the world cup of 2010 J Hum Kinet 30: 115–121.
16. Durnin, J., Wormersley, J. (1974). Body fat assessed from total body density and itsestimation from skinfold thickness: measurements on 481 men and womenaged 16–72 years. Br J Nutr. 4(32): 77-97.
17. Helgerud, J., Engen, L. C., Wisløff, U., & Hoff, J. (2001). Aerobic endurance training improves soccer performance. Med. Sci. Sports Exerc. 33(11): 1925-1931.
18. Hugo, C.K., Carlos, B.J., Rodrigo, R.C., Miguel, V.C., Eduardo, B., Daniel, Z.G., David, C.A & Mikel, I. (2016). Analysis of agreement between 4 lactate threshold measurements methods in professional soccer players. Journal of Strength and Conditioning Research. 30(10): 2864-2870.
19. Ingebrigtsen, J., Bendiksen, M., Randers, M.B., Castagna, C., Krustrup, P & Holtermann, A. (2012). Yo-Yo IR2 testing of elite and sub-elite soccer players: Performance, heart rate response and correlations to other interval tests. Journal of Sports Sciences. 30(13): 1337-1345.
20. Kalapotharakos, V. I., Strimpakos, N., Vithoulka, I., & Karvounidis, C. (2006). Physiological characteristics of elite professional soccer teams of different ranking. Journal of Sports medicine and Physical fitness, 46(4): 515.
21. Krustrup, P., Mohr, M., Amstrup, T., Rysgaard, T., Johansen, J., Steensberg, A., Pedersen P.K., & Bangsbo, J. (2003). The yo-yo intermittent recovery test: physiological response, reliability, and validity. Med Sci Sports Exerc. 35(4): 697-705.
22. Krustrup, P., Mohr, M., Ellingsgaard, H., & Bangsbo, J. (2005). Physical demands during an elite female soccer game: Importance of training status. Med Sci Sports Exerc 37: 1242–1248.
23. Krustrup, P., Mohr, M., Steensberg, A., Bencke, J., Kjaer, M., & Bangsbo, J. (2006). Muscle and blood metabolites during a soccer game: Implications for sprint performance. Med Sci Sports Exerc 38: 1165–1174.

24. McFarland, I. T., Dawes, J. J., Elder, C. L., & Lockie, R. G. (2016). Relationship of two vertical jumping tests to sprint and change of direction speed among male and female collegiate soccer players. Sports, 4(1): 1-7.
25. Mohr, M., Krustrup, P., & Bangsbo, J. (2003). Match performance of highstandard soccer players with special reference to development of fatigue. J Sports Sci 21: 519–528.
26. Rebelo, A., Brito, J., Maia, J., Coelho-e-Silva, M. J., Figueiredo, A. J., Bangsbo, J., & Seabra, A. (2013). Anthropometric characteristics, physical fitness and technical performance of under-19 soccer players by competitive level and field position. Int J Sports Med, 34(4): 312-317.
27. Silvestre R, West, C, Maresh, CM, & Kraemer, WJ. (2006). Body composition and physical performance in men's soccer: a study of a national collegiate athletic association division I team. J Strength Cond Res 20: 177–183.
28. Spencer, M., Bishop, D., Dawson, B., & Goodman, C. (2005). Physiological and metabolic responses of repeated-sprint activities—Specific to field-based team sports. Sports Med 35: 1025–1044.
29. Sporis, G., Jukic, I., Ostojic, S.M., & Milanovic, D. (2009). Fitness profiling in soccer: physical and physiologic characteristics of elite players. Journal of Strength and Conditioning Research. 23(7): 1947-1953.
30. Stolen, T., Chamari, K., Castagna, C., & Wisloff, U. (2005). Physiology of soccer: an update. Sports Med. 35(6):501-536.
31. Svensson, M., & Drust, B. (2005). Testing soccer players. Journal of Sports Sciences, 23: 601–618.
32. Wisløff, U., J. Helgerud, & Hoff, J. (1998). Strength and endurance of elite soccer players. Med. Sci. Sports Exerc. 3:462– 467.

Physical Activities In The Disabled

Halil TANIR[1]



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PHYSICAL ACTIVITIES

Physical activities can be defined as the bodily movements which are produced as a result of the contraction of the skeletal muscles and require more energy expenditure than the basal level (Özer, 2010).

A physical activity is a complex phenomenon defined by intensity, duration and frequency. The frequency refers to the average number of sessions in a given time period, and duration states how many minutes the activity takes. For instance, when a physical activity for at least 30 minutes and 3 days a week is mentioned, the frequency and duration of the activity are referred. Intensity is related to rate of energy expenditure during the activity (Öztürk, 2005).

Many authors have focused on the intensity of activity. For example, subjects are asked to identify the speed of typical walking, jogging or cycling. With the help of reference tables, such kind of information can be converted to approximate energy expenditure (kj/min.), oxygen consumption (l/min or ml/min per kg), and metabolic activity referring to resting conditions.

MET is a multiple of the resting metabolic rate. For an average person, it is equal to the division of the metabolic rate of a specific activity to the resting metabolic rate. 1 MET is equal to oxygen consumption during resting. MET is expressed as the required oxygen consumption per unit of body weight 1 MET = 3.5 ml/kg/min (Öztürk, 2005).

4 different intensity categories for physical activities are defined by the Centre for Disease Control and Prevention (CDC) and American College of Sports Medicine (ACSM) (Öztürk, 2005).

- light < 3 MET
- moderate 3-6 MET
- intense 6-8 MET
- very intense > 8 MET

For the eventuation of an activity, a sum of energy which can be measured as kilojoules and kilocalories (4.184 kilojoules=1 kilocalories) is required. Kilojoules is preferred as a unit of measurement of energy expenditure. The amount of consumed energy varies from low to high continuously. Total calorie expenditure is related to the amount of muscle mass that causes body movement, intensity and duration of movement, and physical activities that cause the frequency of muscle contractions (Caspersen et al. 1985).

Since muscle contraction has mechanical and metabolic features, it is possible to classify physical activities in terms of purpose and intensity. This may lead to some misunderstanding. Typically, a movement taking place with muscle contraction in the mechanical classification is defined as isometric or static exercise, isotonic or dynamic exercise. Metabolic classification is made according to whether the oxygen used in the contraction process is obtained with the aerobic or anaerobic ways. Whether the activity is aerobic or anaerobic depends mainly on its intensity. Most of the activities include both static and dynamic contractions and both aerobic and anaerobic metabolism. Therefore, activities are classified according to their dominant characteristics.

Physical activities can also be classified according to the purpose of an individual or a group's doing an activity. Common classifications are as follows:

- Professional activities
- Housework
- Free time activities
- Transportation (Özer, 2010).

EVALUATION OF PHYSICAL ACTIVITIES

Valid and reliable measurements are needed to determine the activity trends of children and young people and to organize activity programs (Bates, 2006).

Criterion Methods	Objective Methods	Subjective Methods
a- Direct Observation b- Calorimeters b.1. Direct Calorimeters b.2. Indirect Calorimeters b.2.1. Respiratory Gas Exchange b.2.2. Double Layer Water Method b.2.3. Labelled Bicarbonate Method	a- Heart rate monitoring b- Accelerometers c- Pedometers	a- Diaries b- Records c- Questionnaires questioning the past d- Retrospective data e- Universal questionnaires

Table 1. Physical Activity Assessment Methods

The measurement method preferred to measure physical activity varies in terms of the purpose, budget and design of the study. It is very difficult to be able to perform measurement to determine the level of physical activity. Many of the measurement methods frequently used in epidemiological studies do not have solid psychometric characteristics to be able to ensure reliable measurement in children and adolescents. Most of the reliable methods are not practical (Bates, 2006).

CRITERION METHODS

Behavioural Observation

It is a way of direct monitoring and a direct behavioural observation of motor activities by an experienced observer. It is one of the earliest assessment methods. The use of general guidelines for calorie expenditure is linked to specific activities. A summary determining the calorie output can be obtained from some observations. An important sub-type of this approach is the function classification based on the amount of required physical activity. These approaches may require intensive labour. Therefore, it is expensive to perform it in large-scale studies and requires a lot of time. It is mostly accepted by the participants. It has also been the most commonly used method in children since most of the other techniques are not suitable for children (Vanhees et al. 2005).

Direct Calorimeter

It is the energy expenditure which is evaluated measuring heat generation or heat loss. When compared to other methods, it is a gold standard. It has not been preferred much in researches because it is not suitable for practical application, cannot be applied in large populations and is expensive and difficult method (Vanhees et al. 2005).

Indirect Calorimeter

It is the energy expenditure obtained by measuring heat generation or oxygen and/or carbon dioxide generation (Vanhees et al. 2005).

Double Layer Water Method

It is an important physiological measurement. The use of the double layer water method is a guide for researchers in evaluating energy expenditure. Using two stable isotopes ($^{2}H_2O$ ve $H_2{}^{18}O$) measurements are performed for a few weeks or days continuously (Conway et al. 2002). According to body weight, participants of the study drink certain amount of these isotopes. A mass of spectrometer is used to detect the amount of isotope which is not metabolized in urine. Even though this technique provides objective data with little effort, it has two disadvantages. These are relatively the high cost and the inability to distinguish the types of performed activities. It has been proved that this technique shows true results when compared to indirect calorimeter (Vanhees et al. 2005).

OBJECTIVE METHODS

They are related to mechanical or electronic measurement groups. Various instruments are used to monitor heart rate. Ultimately, they provide a continuous record of the physiological characteristics reflecting the duration and intensity of physical activity. Direct measurement of physical activity through mechanical or electronic devices or physiological measurements is the largest alternative of the questionnaires. Such approaches eliminate the problem of poor memory. However, their usages are limited due to the high price. The fact that people who are tested have to carry these devices on them is disadvantageous. As a result, these measurements can be performed in a small number of cases, even though they have been recently started to be used in larger studies (Vanhees et al. 2005).

Heart Rate Monitoring

Heart rate is typically used to determine the daily energy expenditure (such as oxygen consumption) of physical activity. As a measure of physical activity, the use of heart rate is promising because it has been known that there is a strong positive relationship between heart rate and energy expenditure during dynamic exercise performed in large muscle groups (Strath et al. 2000). When heart rate is compared to EKG monitorization in laboratory and field studies, it has been found that it is valid. It is relatively low-cost. It is non-invasive. With the help of technological developments, it can store heart rate recording information for days or weeks (Trost, 2008). The most important disadvantage of heart rate monitoring is the necessity of calibrating the heart rate-energy expenditure curve for each person. The relationship between heart rate and energy expenditure is variable for other limitations, resting and low-intensity physical activities. Most of the monitors must be carried by the participant for long periods.

In the assessment of physical activity, other approaches using heart rate are recording the time of heart rate changes during daily activities, using the difference between resting heart rate and average daily heart rate and using the integration of the area under the heart rate time curve adjusted according to resting heart rate. Heart rate may not be enough to determine only the level of physical activity. Other factors, such as psychological stress or changes in body temperature, significantly affect heart rate during the day (Vanhees et al. 2005).

Movement Detectors

It was developed to measure physical activity by detecting the movement. Oscillations can be measured in one axis (vertical), in two axes (vertical and mediolateral) or in three axes (vertical, medio-lateral and antero-posterior) (Vanhees et al. 2005).

Pedometers can be the first motion sensors and calculates the number of steps. Ultimately, it measures running or walking distance. Pedometers also detect the vertical oscillations of the body in a way similar to accelerometer-based devices (Tudor-Locke et al. 2004). The calculation of the steps is done by an internal stimulating mechanism. This mechanism records "a step" when the vertical oscillation exceeds a certain threshold. These steps are converted to distance when the average person's foot length is recorded on the pedometer (Welk et al. 2000). As a result, it can detect physical activities related to only walking and running. It cannot accurately record movements such as cycling, swimming, upper extremity movements, weight bearing or climbing. However, since walking and running constitute a large part of the physical activity patterns, pedometer applications become valuable to determine the total amount of daily activity. Additionally, pedometers are very useful for health campaigns such as "10000 steps per day". However, not all pedometers are sufficiently reliable in laboratory or field researches (Vanhees et al. 2005).

Couter et al. (2003) have done a study on the validity of the 10 pedometers. As a result, pedometers have been shown to be the most valid for the evaluation of steps, less valid in assessing distance, and the least valid method for assessing the kilocalorie.

Accelerometers have solved these problems a little more. Piezoelectric transducers and microprocessors are used to determine the direction and magnitude of the acceleration. There is a linear relationship between accelerometer recordings and energy expenditure. Three-dimensional accelerometers are sufficient to monitor all movements. The obstacles in the pedometer (inability of detecting the movements accurately such as cycling, swimming, upper extremity movements, weight bearing or climbing) are also valid to accelerometers. The advantages of the accelerometer are that it is suitable for free living conditions, for long time recording, for the use of measurement of a specific activity, for being light. It is one of the most frequently used objective methods in the reliability of questionnaire studies (Allor & Pivarnik 2001).

SUBJECTIVE METHODS

Physical activities are complex structures of behaviours. Measurements done by asking people to classify the level of physical activities are widely evaluated in epidemiological studies. They include techniques done by obtaining information from the individual, diaries, records, questionnaires, general reports and story studies which can be considered as retrospective. Such methods are practical in evaluating large populations because they are low-cost, relatively easy to implement and in general the participants accept them more comfortably. The information provided by the measurements reported by the individual himself can be converted to the terms that determine energy expenditure (kilocalories or kilojoules; metabolic equivalent (MET) etc.). It is possible to classify individuals according to their physical activity levels (Vanhees et al. 2005).

Diaries

They provide a thorough examination of all physical activities in a given period (usually in a short period). A summary result is taken from a diary:

- Multiplying the total energy spent for the activity and the energy expenditure rate determined for that activity.
- Listing the cumulative time during the activity.

It has been known that diaries are good determinants of daily energy expenditure when compared to indirect calorimeters because diaries are generally limited to 1-3 days and they may not reflect long-term physical activity patterns. The use of diaries by participants is exhausting, and therefore changes in physical activities levels may occur during this period (Pennathur et al. 2003).

Records

They are similar to diaries. However, they show whether specific activity types are made rather than all activities. The time when the activity starts and finishes can be recorded after participation or at the end of the day. Records may be useful for enrolling in the exercise training program. However, like diaries, they may not be useful for the participant and their usages may affect the behaviour of the cases (Vanhees et al. 2005).

Remembrance Questionnaires

They affect behaviours less. They generally require less responsibility than diaries or records. However, some cases have difficulty in remembering details of recent participation in physical activities. In the evaluation of physical activities, remembrance questionnaires are generally used for a period of time between one week and lifetime (Dubbert et al. 2004).

Retrospective Data

It is the most common form of physical activity remembrance questionnaires. It includes specific details of the time period up to one year. If the time period is long enough, retrospective data shows the annual physical activity sufficiently. For instance, the Minnesota Leisure Time Physical Activity questionnaire and the Tecumseh questionnaire provide information on the average duration and frequency of participation for a list of specific physical activities performed in the previous year. Unfortunately, because of much provided data, it is a heavy burden for the memory of the participant. The complexity of the questionnaires also creates an additional challenge (Vanhees et al. 2005).

Universal Questionnaires

It is another kind of remembrance questionnaires. In general, participants are asked to rate their physical activities compared to other people. Age and gender groups should be similar. The simplicity of this application is that it has a tendency to reflect the best in indicating strong physical activity participations. The weakness of it is that these participants can report the same ratio to different physical activity profiles (Lamonte & Ainsworth 2001).

Questionnaire approaches are generally applied to adults, adolescents and elders. However, questionnaire methods can be used in demographic data of specific groups during studies. Recently, some researchers have developed specific questionnaires for elders, adolescents or children (Vanhees et al. 2005).

INTENSITY AND PERIOD OF ACTIVITY IN DISABLED INDIVIDUALS

The World Health Organization (WHO) has provided a definition and classification that focuses on health. Disability based on disease results is stated in three different headings.

According to this, inadequacy means deficiency and disorder in physical structure and functions in terms of health while handicap refers to limitation and inability to perform an activity normally or in the boundaries considered as normal, and disability is expressed as a restriction or inability of performing activities demanded form individuals completely

due to gender, age, social and cultural factors. The child with special needs is expressed as "the child who has different needs in terms of physical, emotional or learning ability from the children who are accepted as normal and they are also children who have varied needs due to this difference and who need to be included in the specialized and individualized educational plans to meet these needs (Masse et al. 2012).

Visually impaired individuals should participate in physical activities at least 10 minutes per day according to their activity levels. This period should be increased gradually up to 1 hour. Being motivated, individuals should be completely involved in meaningful and meaningful activities (King et al. 2007).

Inadequate visual input and visual field limitation in the visually impaired individuals cause problems such as walking and posture disorders. As a result of these problems, disruptions in the musculoskeletal systems of individuals start to occur. Therefore, it has been recommended to perform exercises to improve body posture, flexion and body awareness in three dimensional medium during physical activity. People who have partial hearing loss and use hearing aids can also participate in activities. While doing physical activity, the activities are explained with picture cards and illuminated panels and individuals are asked to follow the instructions properly. Individuals can also be directed with the use of sign language. Especially aerobic and equilibrium activities are important for hearing impaired individuals. Sedentary lifestyle prevails in mentally disabled individuals. Therefore, individuals with autism and Down syndrome causing mental disability remain inadequate in an active social life and physical activities. This also increases the risk of obesity. Complications caused by sedentary life can be listed as follows: cardiovascular diseases, diabetes, bone and joint problems and depression. Children should perform at least 1 hour of physical activity with aerobic activity features while adults should perform moderate activities for at least 2 hours per week. The degree of difficulty of the activities should be gradually increased and warm-up exercises should be performed for 5 or 10 minutes before starting the physical activity. They should be motivating and evocatory activities for individuals. It is recommended for individuals to perform activities determined according to their level of development and sensory needs. Activities should be planned properly according to the ages of individuals. If individuals need additional directions, they can be given not only in auditory, but visual or physical ways. In order to avoid distractibility in individuals with mental disabilities, it should be ensured that the environment where the activity is performed is not overcrowded, disorderly and noisy. At schools, children with autism and distractibility should be prevented from walking in the corridor and movements in the classroom (King et al. 2007).

Physically handicapped individuals can participate in very intense activities 3 days a week for 20 minutes or in moderate activites for at least half an hour per day. For example, an individual's playing basketball with a wheelchair for 20 minutes a day is considered as a very intense activity while his wheelchair use for 30-40 minutes is considered as a moderate physical activity. Individuals with disabilities should begin to participate in physical activities from childhood. The participation of children with disabilities in physical activities at school is quite low (King et al. 2007).

AUTISM AND PHYSICAL ACTIVITIES

Autism is a lifelong condition that is usually diagnosed in early childhood and is associated with the brain. Training programs which are supportive for basic skills should be added to their education in order for children with autism to distinguish their bodies and for their learning. Trainings enable children to improve their movement skills in recognition of their bodies and the environment they are in (Christensen et al.

2016). Although the factors that cause autism have not been known, autism contains neurological and biological elements. Only 10% of individuals with autism have a medical problem. Autism spectrum disorder (ASD) may occur as a result of various causes. The course and style of autism may vary from person to person depending on the influence of multiple elements. Motor development in children includes physiological and biological developments as well as different areas of change (Baron-Cohen et al. 2009). Diagnostic agents of autism are delay in communication skills, difficulty in social interaction, specific behaviour and development patterns. In addition to these, a regression in the development of motor behaviours in people with autism has been observed (Fombonne, 2005). In the study Green et al. did (2009), they reported that movement disorder was observed in 79% of 101 children with autism. According to the results of this study, the problem of people with autism at motor skills limits and decreases their abilities to perform a physical activity. In the study Pan (2008) did on students with ASD (n=23) in the school period and with non-disabled primary school students (n=23), their levels of physical activities were compared and reported that children with autism were significantly more sedentary. In their study, Lang et al. (2010) concluded that exercises made positive progress on motor development of individuals with ASD and that exercise is a very important necessity in their lives. Increasing abilities of basic skills of these children should be accepted as a main goal while regulating their training programmes, and exercise programmes aimed at these should be formed. Social life activities in children become easier with the help of movements which are gained (Goldman et al. 2009).

PHYSICAL DISABILITY AND PHYSICAL ACTIVITIES

Physically disabled individuals lose their physical skills to different extents as a result of musculoskeletal-nervous system deprivations caused by diseases or accidents. They have difficulty in adapting to social life and fulfilling their daily needs (Murphy & Carbone 2008). The functional limitations having occurred because of functions and structures of the body, environmental factors and the interaction of the psycho-emotional problems experienced by the individuals affect the social life of the person in a negative way. Most people with disabilities have difficulties in participating in physical activities due to negative factors such as inequality of opportunities, low performance expectancies and social discrimination. Disabled individuals are more inactive than healthy individuals. The World Health Organization stated that this is a significant community health problem (Fernhall et al. 2008). To be able to prevent chronic diseases caused by inactivity, participation in physical activities should be increased. Emotional, physical and social problems may occur in people with disabilities. Sports programs and recreational activities should be included to deal with the problems observed in physically disabled people (Bayramlar, 2009). Transforming physical activities into a way of life contributes to improve one's psychological health. When performing a physical activity, the amount of activity specific to the individual and appropriate intensity should be determined. People with physical problems should increase their participation in activities and maintain their level of physical activity. In order to perform physical activities safely, additional health problems, physical fitness, age and activity level of the person should be taken into consideration. Various physical activities are available for each disabled person (Alves et al. 2016; Kang et al. 2014).

MENTAL DISABILITY AND PHYSICAL ACTIVITIES

Since it concerns many fields, different definitions have been provided on individuals who differ in terms of intelligence levels. Therefore, levels of intelligence have been examined from different perspectives and different definitions have been made. The first definition was made with respect to medical and biological items. According to this

definition, mental disability occurs in the development process and is characterized by being below the average in general intelligence functions and inadequate in adaptive behaviours (Schalock et al. 2007). Children with mild mental retardation compose approximately 85% of all mentally disabled people. Children with mental disabilities who are expressed as educable mentally disabled children cannot participate in normal primary education because their mental development is lower than the normal level. These children who are defined as educable mentally disabled children can be educated on academic subjects at primary school level; they can live independently in the society by adapting to social factors and can have the potential to develop in professional competence areas in the adult period by taking support partly or completely. People with mental disabilities may have problems in motor development as well as social, emotional, and psychological factors. In addition to disturbances in other factors, problems in motor development may occur due to inadequate physical fitness (Draheim, 2006). Like healthy individuals, individuals with mental disability should have adequate levels of physical fitness to maintain their daily living activities. Physical fitness also ensures sufficient energy to perform recreational activities (Stanish et al. 2006). The fact that mentally disabled individuals have long reaction times and their physical fitness levels are inadequate leads to limitations in daily living activities (Dairo et al. 2016). The American Physical Education, Recreation and Dance Association for Healthy Living have made two different definitions: sufficiency of physical-motor fitness and health- related sufficiency. Health-related sufficiency focuses more on psychological factors because it has been thought to protect the individual against different diseases such as obesity and heart diseases. Performing self-care activities without reluctance and exhaustion, recreation and daily living activities such as work life are a more realistic goal for health-related sufficiency than physical-motor fitness. All people need to improve their body composition, cardiovascular functions, the amount of flexibility, stamina of abdominal muscles and features such as strength. Physical activities and exercises are as important for healthy people as for mentally disabled people (Stanish et al. 2016). Individuals with disabilities are wished to participate in more activities (Weiss et al. 2003). Physical fitness levels of individuals should be determined to enable them to participate in physical activities. In general, physical fitness contains matters such as body composition, flexibility, stamina, speed, balance, muscle strength and anaerobic and aerobic power. Physical fitness ensures the development of motor convenience factors in convenient people, the ability of performing daily life activities, participating in physical activities and motor skills such as walking, running, jumping, leaping, catching, throwing, etc. It has been known that vocational education of people with mental disabilities is more likely to use their physical strength than their mental skills. It is important to develop physical sufficiency and motor sufficiency matters in order for them to benefit from courses such as vocational education and physical education (Frey & Temple 2006).

CONDITIONS HINDERING PHYSICAL ACTIVITIES IN DISABLED PEOPLE

The acquisition and protection of physical activity habits is an important issue for people with disabilities. However, when compared to the general population, people with disabilities cannot participate in physical activity due to personal and environmental factors and they have more health problems (Kirchner et al. 2008). Physical activities have a great effect on preventing health problems and reducing health expenditures for people with disabilities (Phillips et al. 2009). In this context, Kirchner et al. (2008) conducted studies to determine the obstacles affecting the physical activity participation of physically disabled and visually handicapped individuals. Obstacles reported by the study result are the environmental ones which are frequently mentioned such as surrounding construction areas, pedestrian ways and sewers. The participants stated

that they had overcome these obstacles by changing the course of the trip and planning a trip and moving more slowly outside. Finch and Owen (2001) examined the factors that negatively affected the participation of physically disabled people in physical activities. When the results of the questionnaire are examined, it can be stated that disorders that disabled individuals have creates problems in their physical activity participations. The fact that body mass index is over the normal limit affects the participation in physical activities adversely. Physical activities are inversely proportional to age and participation in physical activities becomes more difficult as age progresses. How the physical, social and psychological conditions of individuals with disabilities are altered by physical activities and the advantages of physical activities for people with disabilities are the current research topics. When the studies have been examined, it can be suggested that Spivock et al. (2008) focused on the difficulties experienced by people with disabilities in physical activity participations. As a result of their research, two main factors, environmental and individual factors, were identified. Environmental factors are divided into two: physical and social factors. Individual factors are also divided into two factors: economic and psychological. Individuals with disabilities encounter more than one obstacle in their physical activity participations. In order to prevent these obstacles, there is a need for state policies, municipality regulations, the disabled sports federations, non-governmental organizations and awareness-raising publications of media channels.

As a result of the research conducted to determine the participation of people with disabilities in physical activities, the participants stated that they had difficulty in doing physical activities due to high amount of wish to stay at home, dislike of the physical activities, lack of people with whom disabled individuals can perform physical activities together and troubles caused by health problems (Shields & Synnot 2016). Similarly, as a result of the research Heller et al. (2011) did about adults with Down syndrome, they determined some obstacles for physical activity participations such as participation fees of physical activity courses, lack of information about how, where and how intense a physical activity should be performed, inability of providing the disabled with easy accessible transportation, remaining incapable of how to use the various tools used in physical activities, anxiety experienced by disabled individuals because of other people's negative behaviours, lack of trainers who can train teach physical activities properly and lack of communication with physical activity centres. In another study, people with physical disabilities have identified factors, such as participation fees of physical activity courses, transportation and lack of information about the physical activity centres in the environment where the disabled live, as obstacles to participate in physical activities. Additionally, at the results of various studies, physical environment barriers, the behaviours and perceptions of non-disabled people, perspectives of family and society, the lack of helpers around them, weakness, low motivation and the obstacles due to the problems of daily living activities have been suggested to be the factors that make the participation of people with disabilities in physical activities difficult (Rimmer & Rowland 2008). Many researches have been conducted on the benefits gained on the consequences of physical activity participations of the disabled individuals in Turkey. Esatbeyoğlu and Karahan (2014) examined the development of socialization through their activity programs. Savucu and Biçer (2009) stated that physical activities are important factors for people with disabilities to fulfil the feelings of happiness, motivation and achievement.

REFERENCES

1. Allor, K. M., & Pivarnik, J. M. (2001). Stability and convergent validity of three physical activity assessments. *Medicine and Science in Sports and Exercise*, *33*(4), 671-676.

2. Alves, A. J., Viana, J. L., Cavalcante, S. L., Oliveira, N. L., Duarte, J. A., Mota, J., ... & Ribeiro, F. (2016). Physical activity in primary and secondary prevention of cardiovascular disease: Overview updated. *World Journal of Cardiology, 8*(10), 575.
3. Baron-Cohen, S., Scott, F. J., Allison, C., Williams, J., Bolton, P., Matthews, F. E., & Brayne, C. (2009). Prevalence of autism-spectrum conditions: UK school-based population study. *The British Journal of Psychiatry*, *194*(6), 500-509.
4. Bates, H. (2006). *Daily Physical Activity for Children and Youth: A Review and Synthesis of the Literature*.
5. Bayramlar, K., & People, S. I. D. (2009). Ortopedik özürlülerde rekreasyonel aktiviteler ve spor. *Ankara Sağlık Hizmetleri Dergisi*, *8*(1), 23-27.
6. Caspersen, C.J., Powell, K.E., & Christenson, G.M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports (1974-)*, *100*(2), 126-131.
7. Christensen, D. L., Braun, K. V. N., Baio, J., Bilder, D., Charles, J., Constantino, J. N., ... & Lee, L. C. (2018). Prevalence and characteristics of autism spectrum disorder among children aged 8 years-autism and developmental disabilities monitoring network, 11 sites, United States, 2012. *MMWR Surveillance Summaries*, *65*(13), 1.
8. Dairo, Y. M., Collett, J., Dawes, H., & Oskrochi, G. R. (2016). Physical activity levels in adults with intellectual disabilities: A systematic review. *Preventive Medicine Reports*, *4*, 209-219.
9. Draheim, C. C. (2006). Cardiovascular disease prevalence and risk factors of persons with mental retardation. *Mental Retardation and Developmental Disabilities Research Reviews*, *12*(1), 3-12.
10. Dubbert, P. M., Carithers, T., Hall, J. E., Barbour, K. A., Clark, B. L., Sumner, A. E., & Crook, E. D. (2002). Obesity, physical inactivity, and risk for cardiovascular disease. *The American Journal of the Medical Sciences*, *324*(3), 116-126.
11. Esatbeyoğlu, F., & Karahan, B.G. (2014). Engelli bireylerin fiziksel aktiviteye katılımlarının önündeki engeller. *Spor Bilimleri Dergisi*, *25*(2), 043-055.
12. Fernhall, B., Heffernan, K., Jae, S. Y., & Hedrick, B. (2008). Health implications of physical activity in individuals with spinal cord injury: A literature review. *Journal of Health and Human Services Administration*, 468-502.
13. Finch, C. F., & Owen, N. (2001). Injury prevention and the promotion of physical activity: What is the nexus?. *Journal of Science and Medicine in Sport*, *4*(1), 77-87.
14. Fombonne, E. (2005). The changing epidemiology of autism. *Journal of Applied Research in Intellectual Disabilitie, 18*(4), 281-94.
15. Frey, G. C., Temple, V. A., & Stanish, H. I. (2006). Introduction: Preventive health and individuals with mental retardation. *Mental Retardation and Developmental Disabilities Research Reviews*, *12*(1), 1-2.
16. Goldman, S., Wang, C., Salgado, M. W., Greene, P. E., Kim, M., & Rapin, I. (2009). Motor stereotypies in children with autism and other developmental disorders. *Developmental Medicine & Child Neurology*, *51*(1), 30-38.
17. Green, D., Charman, T., Pickles, A., Chandler, S., Loucas, T., Simonoff, E., & Baird, G. (2009). Impairment in movement skills of children with autistic spectrum disorders. *Developmental Medicine & Child Neurology*, *51*(4), 311-316.
18. Heller, T., McCubbin, J. A., Drum, C., & Peterson, J. (2011). Physical activity and nutrition health promotion interventions: What is working for people with intellectual disabilities?. *Intellectual and Developmental Disabilities*, *49*(1), 26-36.

19. Kang, L. J., Palisano, R. J., King, G. A., & Chiarello, L. A. (2014). A multidimensional model of optimal participation of children with physical disabilities. *Disability and Rehabilitation, 36*(20), 1735-1741.
20. King, G. A., Law, M., King, S., Hurley, P., Hanna, S., Kertoy, M., & Rosenbaum, P. (2007). Measuring children's participation in recreation and leisure activities: Construct validation of the CAPE and PAC. *Child: Care, Health and Development*, *33*(1), 28-39.
21. Kirchner, C. E., Gerber, E. G., & Smith, B. C. (2008). Designed to deter: Community barriers to physical activity for people with visual or motor impairments. *American Journal of Preventive Medicine*, *34*(4), 349-352.
22. LaMonte, M. J., & Ainsworth, B. E. (2001). Quantifying energy expenditure and physical activity in the context of dose response. *Medicine and Science in Sports and Exercise*, *33*(6 Suppl), S370-8.
23. Lang, R., Koegel, L. K., Ashbaugh, K., Regester, A., Ence, W., & Smith, W. (2010). Physical exercise and individuals with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders*, *4*(4), 565-576.
24. Masse, L. C., Miller, A. R., Shen, J., Schiariti, V., & Roxborough, L. (2012). Comparing participation in activities among children with disabilities. *Research in Developmental Disabilities*, *33*(6), 2245-2254.
25. Özer, M.K. (2010). *Fiziksel uygunluk (3. Baskı.).* Ankara: Nobel.
26. Öztürk, M. (2005). *Üniversitede eğitim öğretim gören öğrencilerde uluslararası fiziksel aktivite anketinin (IPAQ) geçerliliği ve güvenirliği ve fiziksel aktivite düzeyinin belirlenmesi.* (Yayımlanmamış yüksek lisans tezi) Hacettepe Üniversitesi, Sağlık Bilimler Enstitüsü, Ankara.
27. Pan, C.Y. (2008). Objectively measured physical activity between children with autism spectrum disorders and children without disabilities during inclusive recess settings in Taiwan. *Journal of Autism and Developmental Disorders*, *38*(7), 1292.
28. Pennathur, A., Magham, R., Contreras, L. R., & Dowling, W. (2003). Daily living activities in older adults: Part I - a review of physical activity and dietary intake assessment methods. *International Journal of Industrial Ergonomics, 32*(6), 389-404.
29. Phillips, M., Flemming, N., & Tsintzas, K. (2009). An exploratory study of physical activity and perceived barriers to exercise in ambulant people with neuromuscular disease compared with unaffected controls. *Clinical Rehabilitation*, *23*(8), 746-755.
30. Rimmer, J. A., & Rowland, J. L. (2008). Physical activity for youth with disabilities: A critical need in an underserved population. *Developmental Neurorehabilitation*, *11*(2), 141-148.
31. Savucu, Y., & Biçer, S. Y. (2009). Zihinsel engellilerde fiziksel aktivitelerin önemi. *Turkiye Klinikleri Journal of Sports Sciences*, *1*(2), 117-122.
32. Schalock, R. L., Luckasson, R. A., & Shogren, K. A. (2007). The renaming of mental retardation: Understanding the change to the term intellectual disability. *Intellectual and Developmental Disabilities*, *45*(2), 116-124.
33. Shields, N., Synnot, A. J., & Barr, M. (2012). Perceived barriers and facilitators to physical activity for children with disability: A systematic review. *Br J Sports Med*, *46*(14), 989-997.
34. Spivock, M., Gauvin, L., Riva, M., & Brodeur, J. M. (2008). Promoting active living among people with physical disabilities: Evidence for neighborhood-level buoys. *American Journal of Preventive Medicine*, *34*(4), 291-298.

35. Stanish, H. I., Temple, V. A., & Frey, G. C. (2006). Health-promoting physical activity of adults with mental retardation. *Mental Retardation and Developmental Disabilities Research Reviews*, *12*(1), 13-21.

36. Strath, S. J., Swartz, A. M., Bassett, J. D., O'Brien, W. L., King, G. A., & Ainsworth, B. E. (2000). Evaluation of heart rate as a method for assessing moderate intensity physical activity. *Medicine and Science in Sports and Exercise*, *32*(9 Suppl), S465-70.

37. Trost, S.G. (2008). Physical education, physical activity and academic performance in youth. *Chronicle of Kinesiology & Physical Education in Higher Education, 19*(3), 33-40.

38. Tudor-Locke, C., Ainsworth, B. E., Adair, L. S., & Popkin, B. M. (2003). Objective physical activity of Filipino youth stratified for commuting mode to school. *Medicine & Science in Sports & Exercise*, *35*(3), 465-471.

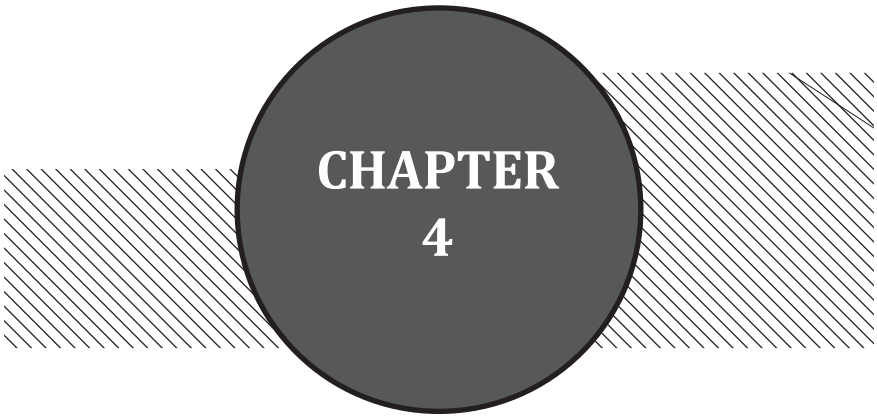
39. Vanhees, L., Lefevre, J., Philippaerts, R., Martens, M., Huygens, W., ... & Beunen, G. (2005). How to assess physical activity? How to assess physical fitness?. *European Journal of Cardiovascular Prevention & Rehabilitation*, *12*(2), 102-114.

40. Weiss, J., Diamond, T., Demark, J., & Lovald, B. (2003). Involvement in Special Olympics and its relations to self-concept and actual competency in participants with developmental disabilities. *Research in Developmental Disabilities*, *24*(4), 281-305.

41. Welk, G. J., Differding, J. A., Thompson, R. W., Blair, S. N., Dziura, J., & Hart, P. (2000). The utility of the Digi-walker step counter to assess daily physical activity patterns. *Medicine & Science in Sports & Exercise*, *32*(9), S481-S488.

The Concept Of Attention In Sports

Erkan ÇETİNKAYA[1]



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The dictionary meaning of attention as a concept is expressed as gathering the thoughts and emotions on a specific thing, being awake, behaving vigilant, interest and care (Turkish Language Association, 1994).

In her study, Gözalan (2013) defined attention as a procedure of selecting and sorting out any of the stimulants taken with sensory mechanisms from the others in terms of certain purposes (Gözalan, 2013).

The Definition of Attention and Concentration

The concept of attention was defined by William James about 110 years ago as the cognitive interpretation of more than one thought or object at the same time, consecutively and explicitly. Concentration, focus and consciousness constitute the core of attention. It can be said that in attention, some of the things are taken into more consideration than the others. Attention is the focus of the individual on a particular place or a different field by coming from external stimulants (Tiryaki, 2000). The individual is a social entity who tries to keep pace with those in their environment, responds to the event they experience idiosyncratically, perceives the stimulants coming from the environment cognitively and makes systematic choices from these stimulants, interprets and explains the choices they have made in mind. The certain systematic placement of the stimulants coming from the environment in mind is carefully explained (Bozan & Akay, 2012).

Just to clarify the concept of concentration with an example; most of us have experienced that in the branch of athletics, the athlete thinks of a successful jump or, more explicitly, targets the movement and concentrates during the competition before performing a high jump or a long jump performance, by directing their mind towards the bar or take off board before the movement. The athlete does not pay attention to the support from the tribunes or to the referees and sports officials next to the bar before they begin the jump or the time they begin to run for the jump. Considering a different type of sports, for example, in basketball, which is one of the team sports, the player can suddenly pass the ball to their friend who is waiting under the hoop when their coach outside the court shouts as they drive the ball towards the other hoop. The athlete has heard the technical tactics of their coach and acted accordingly during the shouting of the spectators following the match in the tribune, the calls of their teammates, and the speeches of the rival team's coach. Both of the examples given show that the individual intensifies their attention among the internal and external stimulants, that the other stimulants have little or no value in the control of the mind or that these stimulants are not different. This event is known as focusing attention or selective attention, paying attention or concentration (Çolakoglu et al., 1993).

Attention can also be described as being aware of the incoming stimulants. These stimulants coming from the environment can be internal as in memories and thoughts, or external as in images and external sounds. The majority of stimulants stemming from the external world which the individuals perceive and see in their minds are captured by the sensory organs; and only a little part of them can be selected and perceived. It is impossible for people to deal with the external stimulants at the same time. Therefore, it is thought that people have limited capacities (Karaduman, 2004).

Attention is a coordination made by the sensory organs to facilitate response to any stimulants from the environment. It is the gathering of the individuals' body and soul energies in a certain area. At that time, physiological changes may occur in the individuals. Similar to the attitude of the sensory organs for these external stimulants, a physical and mental change occurs in the bodies of the individuals doing sports (Karagöz, 2008). If we make it more obvious, the concept of attention can be said to undertake a selective strainer or filter role in the organism. For this reason, human mind does not focus on more than

one stimulant reaching but in the direction that attracts attention. The concept of filter mentioned here can be interpreted as a mechanism that decides whether the stimulants coming to sensory organs are eliminated. Therefore, whether the stimulants coming to the organism are transmitted to short-term memory first, and then to long-term memory depends on attention. The human organism maps the external remarkable stimulants, transfers them to short-term memory first, and then sends them to long-term memory by reorganizing through preliminary learnings when they overlap with the individual's internal life and needs. In other words, all the stimulants that enter the sensory area cannot easily enter the attention zone. The perception of a stimulant through selective attention depends on the appropriateness and significance level of human in terms of organism objectives (Karakulaklı, 2017). Attention is a process that occurs sequentially in different parts of the mind. The significant characteristics of attention system is the fact that it has limited capacity. The capacity of attention may vary among people and even in various situations within the same person (Küçük et al., 2009).

In his study, Karakulaklı (2017) stated in terms of attention that it made human focus only on the direction in line with their current objective among more than one stimulants around the environment and perform the tasks within their objective. Furthermore, he also expressed that the human had to perform many processes due to this characteristics of the nervous system, the first process of which was to selectively transmit and receive sensory news from external environment. Due to the fact that more than one sensory information is transmitted to the nervous system of the individuals at the same time, the part of the information that is needed at that moment is used by the nervous system while the rest of the information is filtered and is formed of the needs that are obtained. If attention did not have a selective characteristic, the sensory organs would not be able to make a reasonable choice across many external stimulants. Attention is also closely related to selecting both the information and the behavioral repertoire. Therefore, the concept of selectivity can be seen at different levels and rates as the sensory recording in the living beings (Karakulaklı, 2017). Attention may affect sensory memory. In other words, attention is the process of selecting any of the stimulants from the others according to their cognitive memory by focusing on certain targets, which generates stimulation in the organism taken with sensory mechanisms (Aydın, 1999).

There are two types of attention; attention filtering the outside world, and selective attention. The attention filtering the outside world ensures that the stimulants around are continuously received and processed in order to acknowledge which stimulant is more important and appropriate for the individual. It can be said for this attention process that it is oriented to perceiving the changes and differences in the environment. Hence, we try to recognize differences around and understand them. In selective attention, there is a certain object taken into consideration. At this point, perceptual selectivity and perceptual rules come into play. In general, size, density, color, innovation and expectation (unexpected stimulants are underestimated) are more meaningful to individuals than the object they are focused on. Therefore, the situation you are in directs your selective attention. To set an example; the fact that individuals are more interested in food during the time they are physiologically hungry may be considered as an effect of this situation (Bacanlı, 2001). A characteristic qualification that an athlete should have so as to improve skill and performance is attention. Attention is the action of the brain and a function that is transmitted to movement. In a way, attention is the sensitive adjustment pass key of the motor skills. It is a psychomotor dynamo. Attention does not become autonomous just like movement because it appears and disappears by will, or changes shape qualitatively and quantitatively. Like a camera diagram, it relatively and continuously gets bigger or smaller with the will warning intensity. Attention can also be intensified, focused, distracted. Attention performs by will. With the exercises, attention can be taken to the desired level.

Furthermore, attention exercises can be performed within the mind (Özdemir, 2010).

Mehmet Burak Demir (2015) stated in his study that attention was the process of filtering the information coming from the environment with the help of the top down control coming from the central nervous system and that it could help using the limited resources in the most appropriate way in accordance with the purpose. He also described attention as the capacity to make the selected analyses of the inputs. Attention is the fact that our nervous system focuses only on a particular event for a certain period of time and is closed to external stimulants. Attention also includes the gradual and selective reduction activities of the stimulation threshold regarding the stimulants in order to be better perceived by a stimulant class when compared to other stimulants. Every person has the ability of attention. If it were not so, people would have difficulty understanding even the simplest events. Considering the moments when we learned how to read and write and ride a bicycle, we can see that we all use our attention and ability to focus in a way in our ordinary daily life without even being aware of it (Demir, M., 2015).

When considering the processes related to attention, these processes can be ranked as stimulation (general responsiveness level), sustaining attention (vigilance), orientation (reorganization of the sensory organs), selective attention, resisting dissuasion. Detecting the stimulant (focusing), processing the detected stimulant, filtering the other stimulants while focusing on the relevant stimulant, shifting attention when appropriate, preventing involuntary shifting (distractibility) and generating a response to the input information are also among the attention processes (Madi, 2011).

Attention has three fundamental components. These are; focusing, sustaining attention and orientation response. Furthermore, there are four different types of attention that affect the learning process. These are;

1. FOCUSED ATTENTION

Focused attention is the ability to focus on a task or a specific part of the environment and to reject the distracting stimulants. Continuity in attention is the capacity to focus attention for a certain period of time (Demir, M., 2015). It is said that focused attention stems from internal top-down effects and external bottom-up effects. External effects have a significant difference compared to the stimulants in the environment and when it comes to these effects, instead of paying attention, we express that these stimulants are attracting our attention. On the other hand, we pay attention to a stimulant in the internal attention, that is to say, we focus our information processing operations on that stimulant by making great effort. The stimulant we have paid attention to may be a limited area of the visual field; attention may be object-based or characteristic-based and may include the color or shape of an object. Focused attention is the fact that the individual selects the appropriate stimulants regarding the predetermined task among those that are inappropriate and responds to them. Therefore, it requires selectivity in perception and response. The fact that the mind can concentrate on one subject by moving away from all the stimulants and keep on this is called focused attention. Focused attention is the type of attention that keeps attention to stay a certain subject and thus, it is distinguished from selective attention.

2. SELECTIVE ATTENTION

Selective attention is the ability to focus one's brain on a single point by ignoring all the external stimulants. In other words, it is a process in which we choose a stimulant to process and neglect the others. In our daily lives, our sense organs are always in a choice process either willingly or unwillingly. That is to say, selection is the most significant factor in attention because selection provides attention. While trying to do homework,

you can hear the sound of TV in the other room. There are visual and auditory stimulants here. You hear what you choose of the two. Therefore, you block the other stimulants. That is the point where the loss or lack of attention starts.

3. CONTINUOUS ATTENTION

Continuous attention is the sustainability of focused attention. Sustaining our attention on a subject which we carefully select among many stimulants and fully focus with focused attention occurs with our continuous attention ability. One of the most important requirements of success is to sustain the ability to focus. The greatest secret of people's successes is in direct proportion to their ability to select carefully, focus and sustain it. People who can achieve this are more likely to be successful and this is an ability that can be improved through training (Doğutepe & Karakaş, 2008).

4. DIVIDED ATTENTION

Divided attention is the capacity to divide the attention to different tasks or different parts of the environment (Demir, M., 2015). The ability to divide attention is closely related to the capacity of information processing. Cognitive flexibility is the ability to shift attention from one part of the environment to another in an appropriate way. According to some researchers, attention can be explained as the prefrontal attention system and the posterior attention system in the brain. The prefrontal attention system is related to the director, motor attention (due to the prefrontal lobe). The posterior attention system is also called as post-conscious and is related to concentration and oriented attention that can be summarized with selecting the stimulant and focusing (Doğutepe & Karakaş, 2008).

The Characteristics of Attention

In his study, Özdemir (2010) stated the following common characteristics of attention.

1. Attention is just like a photo diagram.
2. Attention has a shrinkable and expanding structure.
3. Attention has a structure that determines the details of an area from one point to a wide framework.
4. Attention may be exhausted.
5. Attention can be distracted.
6. Attention can predict (Özdemir, 2010).

The Definition of Sports

Sports can be defined as a free time activity performed with or without a tool, within certain limits and individually, an activity that can take full time as an occupation, or a cultural concept based on competition and solidarity that develops the individual emotionally and physically and helps them to socialize (Bompa, 1998). Sports is an important tool in raising healthy generations and thus, creating contemporary societies. while sports contributes to children and young people to acquire a healthy and socially developed personality both physically and spiritually, it also makes major contributions to the individual to grow up as a constructive, creative, productive, characterful, gentleman, prudent, tolerant, moral, well-behaved, self-confident, and a proper, example human being (Yetim, 2005). In another definition, sports is defined as a competition-based physical and mental activity which is performed by the individuals or groups for entertainment, health, adventure or demonstration and which allows the individual to develop cognitive, emotional and psycho-motor characteristics in a systematic order (Sunay, 2010). Together

with improving the physical and mental health of human beings who are the fundamental element of economic, social and cultural development, providing the development of their character and the improvement of their personality traits, facilitating their adaptation to the environment by providing them knowledge, skills and abilities, providing the international solidarity, coalescence and success among the individuals and societies, and increasing their power of competition, sports is the activities performed in order to compete, excite, contest and defeat according to certain rules within the competition measures (Aytan, G., 2010). As mentioned above, it is not possible to explain sports with a single definition because the concept of sports is attributed to many different meanings in daily life. Apart from the definitions given above, it is possible to approach sports from different aspects (Yetim, 2008).

Attention in Sports

Attention in sports is the psychological functions formed of thinking, perception and dreaming. Attention arises as the skill that performs action due to the intense concentration towards a specific direction. Therefore, while the perceptions of people place only what they are focusing on into conscience, they leave the things they are not focusing on out of conscience. (Tavacıoğlu, 1999). Most of the studies conducted on attention in sports focused on such subjects as the attention styles used by the athletes, that the anxiety experienced narrowed the focus of attention, and whether there was a difference between elite athletes and non-elites/beginners in terms of attention processes (Mesulam & Gürvit, 2004).

Studies on attention in sports in Turkey are quite limited (Çağlar & Koruç, 2006). Studies remained limited due to lack of attention evaluation tools adapted for the athletes in Turkey. Attention is the level of effort spent on focusing on a field of experience, the ability of the individual to sustain focusing on an activity and to concentrate (Çolakoğlu et al., 1993). The fact that the athlete cannot perform well due to losing concentration because of distraction of attention (e.g. a basketball player who is disturbed on the free-throw line due to excessive noise) and confusion (e.g. a defensive player in football who is distracted by the opponent exhibiting a very complex attack pattern) reveals the importance of selective attention and continuous sharing of attention (Abernethy, 1993).

In their study, Çağlar and Koruç (2006) stated that sports was the focus of interest in the studies regarding selective attention, and that in order to demonstrate psychomotor skills successfully, individuals should be able to exhibit selective attention and concentrate on the relevant stimulants while ignoring the irrelevant ones. In any case, the organism is able to indigenise only a certain amount of information while continuously being bombarded with information from both the internal and external environment. For this reason, selectivity is necessary only for a few stimulants to be included in processing. It can be revealed that the ability to direct attention to the appropriate stimulant and sustain paying attention is a significant factor for success in sports. At this point, the significance of assessing the attention and concentration ability of the athlete also becomes crucial. The strategies of attention and decision-making by athletes and trainers are considered as the two of the important characteristics necessary for achieving good performance in sports. This gains more prominence especially in the sports skills which require processing a lot of information in a very short time (Çağlar & Koruç, 2006).

The Factors Affecting Attention

There are many social-psychological and bio-physiological factors affecting attention. For this reason, the concept of attention is a phenomenon that is taken into consideration not only in the field of educational psychology but also in the engineering and communication order (Asan, 2011).

Özdoğan et al. (2005) revealed that motivation, interest, stress, intelligence level, self-confidence, the perception level regarding failure, the way perception and memory process, family attitudes, physical stimulants (sleep, fatigue, nutrition, heat, light, etc.), and learning environment are among the chief factors affecting attention (Özdogan, 2005).

Attention is affected by many factors, both internal and external (Karakulaklı, 2017).

The Internal and External Factors Affecting Attention

Atlı et al. (2016) divided the factors affecting attention into two as internal and external factors. They stated external stimulants as the fact that the stimulant is severe and huge, it is contrast, that is to say, opposite to the stimulants, it is mobile, it is repeated continuously, and it is unusual and new. They also reported that internal stimulants were the factors such as feelings, thoughts, needs, interests, wishes and expectations, and previously learnt personality traits (Atlı et al., 2016). At the same time, there are some factors affecting attention positively and negatively. In his study, Karakulakli (2017) expressed some of these factors as:

- Mental Factors: The mental level of individuals, the process of repertoire and perceptions,
- Readiness: The appropriateness levels of the students affective characteristics and psychomotor skills in order for the individuals to be able to learn,
- Environmental stimulants that the organism is included in: (internal physical stimulants like lack of adequate nutrition and sleep, etc.; external stimulants like noise, light, heat, etc.),
- Excessive or inadequate motivation,
- Deficiencies in the punishment and reward system,
- The lack of adequate feedback,
- Poor belief in success,
- The fact that the individual is extremely stressed and nervous,
- The fact that learning experience contradicts the feelings of the individual,
- The fact that student-centered education is not provided in education system,
- Not giving importance to education,
- Arriving at school early or late,
- The fact that the individual has mental disorders,
- Being very anxious and excited,
- Hormonal disorders in the individual (Karakulaklı, 2017).

The Measurements of Attention

Attention can be measured by the dual task method involving the measurement of directly observable behaviors as the indicators of cognitive and neurophysiological processes, by the laboratory tasks such as reaction time tasks, Stroop test, and Grid test, by the inventories and by performing behavioral analysis via observation. The cognitive measurements of attention include self-reporting tools (paper-and-pencil tests) organized in order to investigate both the mental workload and the selectivity of attention (Çağlar et al., 2011)

The Test Batteries Measuring Attention

The test batteries developed in order to measure attention in the literature are as follows:

1. d2 Attention Test: The purpose of the test is to evaluate the continuous attention and visual screening ability. In this test, the structure of attention and concentration is used as focusing on the continuous selection of a performance-oriented stimulant (Brickenkamp & Zillmer, 1998).

2. Marking Test (MT): It is the continuous attention test. It also measures such behaviors as visual screening, response speed and inhibition of hasty reactions (Lezak, 1995).

3. Wisconsin Card Sorting Test (WCST): This test is related to such characteristics as attention, distinguishing critical motor characteristics, conceptualization and abstract thinking (Heaton et al., 1993).

4. Line Orientation Test (LOT): This test measures the visual-spatial perception.

5. Number Sequence Learning Test (NSLT): This test puts emphasis on memory but it also measures the learning ability.

6. Rey-Osterrieth Complex Figure Test: This test was developed in order to distinguish hereditary mental incompetencies from acquired mental incompetencies (Doğutepe & Karakaş, 2008).

7. Stroop Test: It is accepted as the gold standard of attention measurements (Karakaş et al., 1999).

When the literature is examined, it can be revealed that attention is the focal point of many studies due to the fact that it is associated with the filter task. When we look at the field of sports, it can be seen that attention is able to balance our various perceptions with an effective performance by acting as a filter and that it is important as it can control what is passing through the mind by turning all these into state of emotions. In order to achieve a high level of performance in sports, the athletes performing in different branches should move away from the situations that are not related to them and concentrate on the related ones. If the athletes are able to maintain their attention optimally throughout the whole competition period despite the mental pressure and stress before or during the competition, their state of success is thought to increase. When considered in terms of both the athletes and trainers, attention and decision-making strategies are regarded as the two important elements in exhibiting the best performance. For these two skills, it is required that information is processed quickly. Therefore, it is thought that attention and decision-making strategies extremely important in exhibiting sports skills (Orhan, 2018). It should not be underestimated that attention has an important place in the field of sports. It is considered that attention studies in the field of sports will contribute to the increase of success by taking place under a separate title and plan.

REFERENCES

1. Abernethy, B. (1993). Attention. In R.N. Singer, M. Murphey, L.K. Tennant (Eds.), Handbook of Research on Sport Psychology (pp 127-170), New York: Macmillan Publishing Company.
2. Asan, R. (2011). The effect of eight-week table tennis exercise related to the attention among 9–13 aged children. Master Thesis, Selçuk University, Institute of Health Sciences, Department of Physical Education and Sports, Konya.
3. Atlı, M., Yaşar, G., & Özkan, Z. (2016). Beden Eğitimi ve Spor Öğretmenliği Bölümü Öğrencilerinin Dikkat Eksikliği Hiperaktivite Bozukluğu Belirtilerinin, Akademik Başarı ve Bazı Parametrelerle İlişkisinin İncelenmesi. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, *13*(1), 315-329.
4. Aydın, A. (1999). *Gelişim ve Öğrenme Psikolojisi,* Ankara: Anı Yayıncılık

5. Aytan K., G. (2010). The Effect of Sports on Social Interaction of High School Students, Doctoral Thesis, Gazi University, Institute of Educational Sciences, Physical Education and Sport Teaching Program, Ankara.
6. Bacanlı, H. (2001). Gelişim ve Öğrenme, 4. Baskı, Ankara: Nobel Yayın Dağıtım.
7. Bozan, A., & Akay, Y. (2012). Dikkat geliştirme eğitiminin ilköğretim 5. sınıf öğrencilerinin dikkatlerini toplama becerilerine etkisi, *Western Anatolia Journal of Educational Science, 3*(6), 53-66.
8. Brickenkamp, R., & Zillmer, E. (1998). The d2 Test of Attention. Goettingen, Hogrefe Google Scholar.
9. Çağlar, E., & Koruç, Z. (2006). D2 Dikkat Testinin Sporcularda Güvenirliği Ve Geçerliği. *Spor Bilimleri Dergisi, 17*(2), 58-80.
10. Çağlar, E., Bilge, M., & Söğüt, M. (2011). d2 Dikkat Testinin Çocuk Sporcularda Ölçüt Geçerliğinin Test Edilmesi: Pilot Çalişma. *Gazi Beden Eğitimi ve Spor Bilimleri Dergisi*, *16*(4), 19-29.
11. Çolakoğlu, M., Tiryaki, Ş., & Morali, S. (1993). Konsantrasyon Çalışmalarının Reaksiyon Zamanı Üzerine Etkisi. *Spor Bilimleri Dergisi*, *4*(4), 32-47.
12. Demir B., M. (2015). The Comparison of Reaction Times and the Ability of Focusing Attention of Football Referee at the Different Divisions, Master Thesis, Fırat University, Institute of Health Sciences, Department of Physical Education and Sports, Elazığ.
13. Doğutepe Dinçer, E., & Karakaş, S. (2008). Nöropsikolojik Dikkat Testleri Arasındaki İlişkilerin Modellenmesi*. Bulletin of Clinical Pharmacology*, *18*(1), 31-40.
14. Gözalan, E. (2013). Effect of "Game-Based Attention Training Program", prepared by the researcher, on attention and language skills of 5 and 6 year old children. Master Thesis, Selçuk University, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Çocuk Gelisimi Ve Ev Yönetimi Anabilim Dalı, Çocuk Gelisimi Bilim Dalı, Konya.
15. Karaduman, B., D. (2004). The Effect of Attention Training Program on Fourth and Fifth Grade Primary School Students' Attention, Self-Concept and Achievement Levels, Doctoral Thesis, Ankara University, Institute of Educational Sciences, Department of Educational Sciences, Ankara.
16. Karagöz, Ş., (2008). Inspection of the Effects of Twelve -Week Tennis Courses on Visual and Auditory Reaction Times of 8-10 Years Old Children, Master Thesis, Afyon Kocatepe University, Institute of Health Sciences, Department of Physical Education and Sports, Afyonkarahisar.
17. Karakaş, S., Irak, M., Kurt, M., & Erzengin, Ö. U. (1999). Wisconsin Kart Eşleme Testi ve Stroop Testi TBAG Formu: Ölçülen özellikler açısından karşılaştırmalı analiz. *3P Dergisi, 7*(3), 179-192.
18. Karakulaklı, H. (2017). An Investigation of Sports and Different Variables of Secondary School Students' Attention Institute of Educational Sciences Control Levels (Bayburt City Example). Master Thesis, Atatürk University, Institute of Educational Sciences, Physical Education and Sport Teaching Program, Erzurum.
19. Küçük A, Dolu N, Erdoğan H, (2009). *İlköğretim Öğrencilerinde Yaş, Cinsiyet ve Sosyo-Ekonomik Seviye Farklılıklarının Dikkat Düzeylerine Etkileri, Sağlık Bilimleri Dergisi* (Journal of Health Sciences).
20. Lezak, M. (1995).Neuro psychological Assessment, Oxford University Press, USA.
21. Madi, B. (2011). *Öğrenme beyinde nasıl oluşur?*. Efil Yayınevi.
22. Mesulam, M. M., & Gürvit, İ. H. (Eds.). (2004). *Davranışsal ve kognitif nörolojinin ilkeleri*. Yelkovan Yayıncılık.

23. Orhan, S. (2018). The Effects of Game Education on Attention and Concentration Levels and Hand-Eye Coordination of the Sedentary Children. Master Thesis, Fırat University, Institute of Health Sciences, Department of Physical Education and Sports, Elazığ.
24. Özdemir, T. (2010). A Research on the Impact of Selective Atention in the Process of Teaching Tennis Skills. Master Thesis, Marmara University, Institute of Health Sciences, Department of Physical Education and Sports, İstanbul.
25. Özdoğan, B., Ak, A., Soyutürk, M. (2005). Dikkat eksikliği ve hiperaktivite/aşırı hareketlilik bozukluğu olan çocukların eğitiminde öğretmen el kitabı, Ankara: Devlet Kitapları Müdürlüğü Basımevi.
26. Sunay, H. (2010). Sporda Organizasyon. (1. Baskı). Gazi Kitabevi, Ankara.
27. Tavacıoğlu, L. (1999). *Spor psikolojisi bilişsel değerlendirmeler*, Ankara: Bağırgan Yayınevi.
28. TDK (1994). Okul Sözlüğü, Türk Tarih Kurumu Basım Evi, Ankara.
29. Tiryaki, Ş. (2000). *Spor Psikolojisi Kavramlar, Kuramlar ve Uygulama*, Ankara: Eylül Kitap ve Yayınevi.
30. Yetim, A. A. (2005). Sosyoloji ve Spor. Yaylacık Matbaası. İstanbul: Morpa Kültür Yayınları. s.137
31. Yetim, A.A. (2008). *Sosyoloji ve spor,* Maltepe/Ankara: Bilge Ofset Matbaacılık Yayıncılık.

Parent's Attitudes Towards Extracurricular Sport Activities[1]

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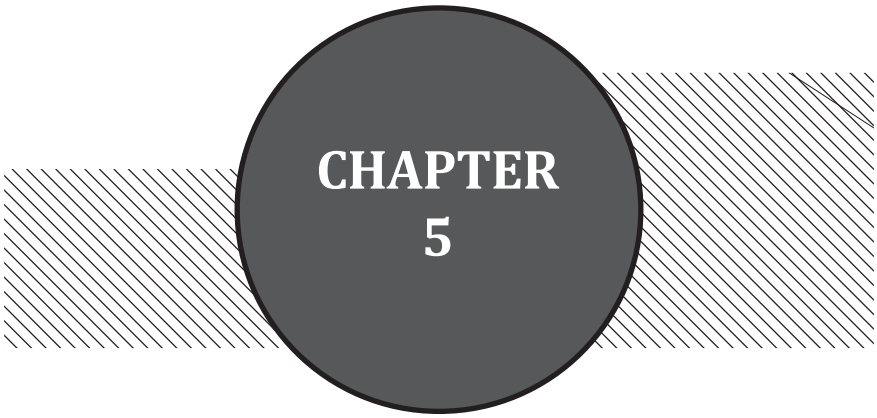
Özbay GÜVEN[3]



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1. INTRODUCTION

Education, which is defined as the operations and activities applied by adults to prepare individuals for social life, has an important place in the realization of cultural transport and the continuity of social life (Akın, Şimşek & Erdem, 2007). Education with important functions in social life is not an independent variable, but interacts with other social institutions, facts and units. Education has a very close relationship with economics, law, administration, religion, culture, leisure time and physical education (Yılmaz, 2016).

Physical education, which aims to improve the physical and mental health of the human being and make it stronger, is previously based on the physiological and muscular development of people in the idea of educating people through physical movements (Tamer & Pulur, 2001), whereas, today, it considers the human body as a whole and considers it to be cognitive, affective, dynamic and physical development (Demirhan, 2006). In other words, it is seen that physical education not only contributes to biological development, but also causes a decrease in depression, stress, anxiety syndromes of the individuals, and increases the self-confidence and self-esteem (Morgan, Saunders & Lubans, 2012).

The school, which prepares the individual for life and guides his or her adaptation to life, may need extracurricular sportive activities which function as a part of the physical education lesson and its reinforcement in gaining these virtues (Yılmaz, 2018). It is not possible to think extracurricular sportive activities separately or independently from formal education activities. The most important condition here is to conduct extracurricular sportive activities in a controlled, planned and scheduled manner (Yılmaz, 2016). In our age, children do not seem to be controlled by parents, teachers or adults, so it seems very easy for children to turn to negative behaviors (Köse, 2013). Different definitions are made for this concept which is important for the development of children.

1.1. Extracurricular Sportive Activity Concept

In order to define the concept of extracurricular activity, researchers make a distinction of structured and unstructured extracurricular activities (Mahoney, Cairns & Farmer, 2003). Structured extracurricular activities are activities that take place within and outside the school depending on a plan and program after the lesson, and include features designed for various purposes (Balyer & Gündüz, 2012). According to another definition, structured extra-curricular activities were defined as activities carried out within a program, aimed at developing certain special skills and abilities of children, depending on certain rules, through experienced adults (Ivaniushina & Aleksandrov, 2005). Extracurricular activities are examined under two headings as structured and unstructured.

1.1.1. Structured Extracurricular Activities

The extracurricular activity concept is all of the planned experiences outside the curriculum. Performance clubs such as academic clubs, individual and team sports, drama and band are typical examples of school-based extracurricular activities (Posner, 1995). These events include regular participation programs, rule-based participation, management by adult activity leaders, emphasis on talent development, and voluntary participation (Mahoney & Stattin, 2000).

The extracurricular activities, which are part of the education program, are defined as planned, scheduled and regular activities carried out within the knowledge of the school management and under the guidance of the teacher, in accordance with the aims of the education, in line with the needs and interests of the students, at school or outside the school (Binbaşıoğlu, 2000). As a strategic tool for designing various activities (travel, competition, physical education, tracking, music, folklore, newspaper/magazine

preparation, performances, theater, fashion shows, exhibitions, chess, tennis, basketball, creative drama etc.) and reducing negative behaviors (smoking and alcohol use, drop-out, etc.), activities, which require a specific plan and program at and outside the school after the lessons, are defined as structured extracurricular activities (Balyer & Gündüz, 2012). Most of the school-based extra-curricular activities, such as sports, student broadcasts, school radio or group performances, are defined as structured extra-curricular activities (Darling, Caldwell, & Smith, 2005). Researchers evaluate extracurricular activities according to three criteria: The first criterion is that the participation is not a compulsory part of the school curriculum and includes the principle of volunteering. Since participation is based on voluntarism, the child is interested in the activity by his/her nature. In addition to the decision of the parent, the child can participate in the activity his/her own request. Therefore, volunteering is essential. The second criterion is the structured activities carried out at certain times and in suitable places controlled by one or more persons. The third criterion is defined as the activities that require "effort" or "struggle" (Robert, 2007).

In order to evaluate students' leisure time in schools, activities that can be arranged in the Circular on Extracurricular Education Studies are determined as tracking, physical education and sports activities, folk dances and fine arts. Under the title of physical education and sports activities, students are included in sports teams in various branches and these activities are carried out as preparation and participation in competitions (Tepeköylü & Yüksel, 2010).

1.1.2. Unstructured Extracurricular Activities

Activities that enable adolescents to gain experience on something by themselves, help them catch up with new opportunities, and provide an ideal environment for acquiring innovation and discovery behaviors are defined as unstructured activities (Dworkin, Larson & Hansen, 2003). According to Ivaniushina & Aleksandrov (2015), non-structured extra-curricular activities are the activities that are not well defined, are not audited and are not carried out within a specific program. An example of this activity is the fact that adolescents play football with their friends on the street, ride bicycles together, or spend time together in neighborhood clubs. Unplanned and unscheduled activities, lack of parental or adult supervision can lead to some negative behaviors of adolescents. The fact that these activities give a sedentary lifestyle like watching television or spending time with their peer group causes adolescents to encounter physical problems (Bartko & Eccles, 2003). For this reason, adults do not want their children to participate in such unstructured social activities, which they generally describe as wasting time (Shannon, 2006).

1.2. The Effects of Extracurricular Activities on Adolescent Development

When extracurricular sports activities are performed in accordance with its objectives, it serves to many development areas of adolescents. These gains are positive attachment, psychological resilience, social, cognitive, behavioral and moral competence development; making their own decisions, feeling of spirituality or purpose, self-efficacy, positive identity development and looking optimistic at the future; providing opportunities for identifying positive behavior, adopting community values and communicating with social values (Catalano et al., 2004). Participation in these activities shapes the developmental traits of both children and young people, and provides them with the opportunity to show a multifaceted development. According to Mahoney, Scweder & Stattin (2002), approximately 75% of 14-year-old adolescents participate in the structured extracurricular activities.

Young people who participate in school-based extracurricular activities can gain the ability to establish social relations with individuals and peers in the society under the

guidance of adults. These activities provide positive development among adolescents and include one or more characteristics that contribute to improving cognitive health. These characteristics include: physical and psychological trust, supportive relationships, sense of belonging, positive social norms, talent development opportunity, family participation and social efforts (Eccles & Gootman, 2002). These activities have a positive effect on psychological, spiritual, social and academic achievements. The effects of extracurricular sports activities on these development areas are briefly mentioned below.

1.2.1 Contribution of Extracurricular Activities to Psychological Development of Adolescents

Researchers suggest that there is a relationship between adolescent participation in extracurricular activities and psychological adjustment (Balsano, 2005). It was stated that adolescents who participated in these activities showed less depression symptoms and higher self-esteem than those who did not (Barber, Eccles & Stone, 2001; Eccles et al., 2003). In addition, in the study by Fredricks & Eccles (2006) on the psychological (depression symptoms, internalization behaviors) and behavioral outcomes (externalization behaviors, alcohol or substance use) of the participation in extra-curricular activities of the adolescents, it was found that there was a positive relationship between participation in extracurricular activities and psychological and behavioral outcomes. Adolescents participating in the activities were found to have higher levels of self-esteem, lower depression and anxiety than those who did not (Guest & Mcree, 2009; Mahoney et al, 2005).

Extracurricular activities can be said to contribute to the psychological well-being of adolescents. These contributions are: gaining a sense of belonging to the school and having a positive attitude towards school, psychological resilience and high level of gains such as internalization (Barber, Eccles & Stone, 2001; Fredricks & Eccles, 2008). Extracurricular activities improve students' motivation and contribute psychologically to their healthy development (Fredricks, Alfed & Eccles, 2010).

1.2.2. Contribution of Extracurricular Activities to Social Development of Adolescents

Structured extracurricular activities create conditions for the acquisition of different social skills that cannot be improved by normal studies in school and provide specific environment for socialization (Feldman & Matjasko, 2005). It also plays an important role in changing the nature of the social development of adolescents (Gerber, 1996; Marsh, 1992; Marsh & Kleitman, 2002). These activities enable adolescents to socialize with their peers and adults, to set goals and reach the goal, to compete in a fair manner and to resolve conflicts peacefully (Darling, 2005). In addition, these activities allow adolescents to collaborate with their peers in terms of their common interests and thus to create new relationships with each other and to gain social capital (Darling, Caldwell & Smith, 2005).

As social relations are deeper and wider in extracurricular activities, students, in general, can improve their relationships in a positive way with their peers, teachers, trainers, school administrators and staff. It is thought that the skills and social relations gained by individuals with participation in these activities improve the school success, educational and professional level, welfare level, health options and positive social behaviors (Eccles et al., 2003).

Extracurricular activity or out-of-class education is a powerful source of social and personality development of children and adolescents (Ivaniushina & Aleksandrov, 2015). Participation in these activities shapes the developmental characteristics of both children and young people and provides them with an opportunity to show a multifaceted development (Yılmaz, 2016). These activities provide adolescents with an opportunity

to gain and practice social, physical and intellectual skills in a wide range of schools, to become a member of society and to contribute to the welfare of the society, to recognize socially and belong to a group, to establish a social relationship with peers and adults who can help both today and in the future (Busseri et al., 2006; Shannon, 2006) to experience and cope with challenges (Eccles, Barber, Stone & Hunt, 2003).

1.2.3. Contribution of Extracurricular Activities to the Academic Achievement of Adolescents

There are many studies on the effect of participation in these activities on academic achievement (Barber, Eccles, & Stone, 2001, Broh, 2002; Seow & Pan, 2014). In the study by Youngs (2008), it was found that students participating in the extracurricular activities have a higher sense of belonging to the school. In addition, Holland & Andre (1987) found in their study that grades of the students participating in the activities were higher than the ones who did not, and as a result their academic achievement increased and they showed positive attitudes towards school.

For adolescents, a sense of belonging to school is an important mediator that provides academic achievement (Knifsend & Graham, 2012). Students' sense of belonging to the school can be associated with their motivation and academic achievement. Successes of adolescents in school increase with a sense of belonging to the school. Studies on the relationship between participation in extracurricular sports activities and the academic achievement of children and young people revealed that there was an increase in the weighted grade point average of the students participating in the extracurricular activities (Anderman, 2002; Barber, Eccles & Stone, 2001; Eccles & Barber, 1999; Fredricks & Eccles, 2005; Hansen, Larsin & Dworkin, 2003; Larson, Hanson & Moneta, 2006; Marsh & Kleitman, 2002).

Since these activities, which are carried out in a school-based manner, are performed within the framework of a specific plan and purpose, the success in these activities can also show itself on the academic achievement of the child (Broh, 2002; Eccles & Barber, 1999; Mahoney, 2000; Marsh & Kleitman, 2003; Melnick, Sabo & Vanfossen, 1992; Silliker & Quirk, 1997; Thomas & Moran, 1991; Zaff et al., 2003). It was determined by many studies that unplanned and unscheduled activities might adversely affect adolescents' academic development. One of the most important factors underlying the unwillingness of families to send their children to these activities is the fact that these activities are carried out irregularly and unrestrainedly, and that their children will not be able to spend their time after the school efficiently and thus their school success will decrease.

1.3. Importance of Research

The attitudes of the family members of the children to the activities have an important effect on participation in extracurricular sports activities. Parents' attitudes and behaviors towards extracurricular sports activities have a decisive effect on whether children participate in these sporting activities (Yılmaz, 2016). The fact that families are aware of the effects of extracurricular sports activities especially on adolescent development and support their children's participation in these activities plays an important role in shaping children's point of view to sports. The influence of the family on the participation of the child in sportive activity can be determined through critical theory narration. Critical theory shows that the ideals of the family that has a voice in the children's participation in sporting activities affect the child's participation in these activities (Coakley, 2003).

Since extra-sport activities are planned and scheduled structured activities, it is seen that parents have low anxiety about what their children do and how they spend time after school (Franklin, 2004). In particular, parents who are working expressed the opinion that these activities enable their children to spend the time after school in a planned and

scheduled manner because they don't have the opportunity to control their children's extracurricular time (Shannon, 2006). Therefore, it can be said that both mother and father support and encouragement are important for participation in these activities.

Studies conducted in the literature for extracurricular activities are generally studies that deal with the relationship between academic achievement and participation in extracurricular activities (Balyer & Gündüz, 2012; Fredrick, 2012). It was determined that there are many studies (Anderson, Funk, Elliot & Smith, 2003; Kremer-Sadness, Izouierdo & Fatigante, 2010; Masia, Plaza, Gonzalez, Deltell & Pariquez, 2013) abroad about parental attitudes, opinions, thoughts and expectations for extracurricular sports activities. However, it was found that there are limited studies (Sari, 2012; Yilmaz, 2016; Yilmaz, 2018), in our country, including parent views on extracurricular sports activities. Sports, which has an important place in the development of high school youth, is also important in revealing the emotions, thoughts and behaviors of the family, which is an institution where children's personality, social and emotional development is formed before the child starts formal education. In particular, the family can contribute to their psychological development by supporting their children's participation in sporting activities. Studies investigating the attitudes of parents towards extracurricular sports activities were found to be limited in the literature. The aim of this study is to investigate the attitudes of high school students towards extracurricular sports activities. For this purpose, answers for the following questions were sought.

At what level are the parental attitudes towards students' participation in extracurricular sports activities?

Do parental attitudes towards students' participation in extracurricular sport activities differ according to the age of the parents?

Do parental attitudes towards students' participation in extracurricular sport activities differ according to the profession of the parents?

Do parental attitudes towards students' participation in extracurricular sport activities differ according to the number of children the parents have?

Do parental attitudes towards students' participation in extracurricular sport activities differ according to the parents' status of doing sports?

Do parental attitudes towards students' participation in extracurricular sport activities differ according to the academic achievement of the children?

2. METHOD

2.1. Research Design

In order to examine parental opinions on the participation of high school students in extracurricular sports activities, survey design from the quantitative research approaches was used. This design is a research model that tries to reveal an important situation and explain how (Karasar, 2014).

2.2. Study Group

In the study conducted on the parents of the students in the high schools in the city center of Kırıkkale in the 2nd Semester of 2014-2015 Academic Year, within the Information provided by the Provincial Directorate of National Education in Kırıkkale, schools are divided into three groups as low, medium and high according to the Transition from Basic Education to Secondary Education (TEOG) scores. As a result of this grouping, parents of 9^{th}, 10^{th}, 11^{th} and 12^{th} grade students in high schools (N=13295) were determined as the population of the study. In the study, "Sample Size Table", in which Cohen, Manion &

Morrison (2007) considered the relationship between sampling error and trust level, was used in order to determine the sample size. It is assumed that a target group of 13295 will be represented by 650 people with a 4% error margin. This number was taken as the base value and 772 parents were included in the study. In this study, cluster sampling method and multistage layered proportional random sampling methods were used as sampling method. 260 (33.7%) of the parents included in the research were female and 512 (66.3%) were male.

2.3. Data Collection

Personal Information Form: In order to determine the attitudes of the parents towards extracurricular sport activities, variables such as age, profession, number of children, status of doing sports, gender of the children and perceived academic achievement are included in the information form.

Scale of Parental Attitude for Extracurricular Sport Activities: The "Scale of Parental Attitude for Extracurricular Sportive Activities", the reliability and validity of which was conducted by Yılmaz & Güven (2015), consists of 17 items and three sub-dimensions, which are "Personal Development", "Academic Perception" and "Social Support". The measurement tool is 5-point Likert and the lowest and highest scores that can be taken from the scale are 17 and 85, respectively. The Cronbach Alpha internal consistency coefficient was calculated for the reliability of the scale. This value was calculated as 0.91 for the general scale and 0.90, 0.83 and 0.81 for the sub-dimensions, respectively. The construct validity of the scale was tested with confirmatory factor analysis. The fit indices obtained are as follows: $\chi 2/df= 2.29$, RMSEA =0.7, RMR=0.06, SRMR=0.07, AGFI=0.85 and GFI=0.89.

The validity and reliability of the measurement tool was re-tested under the current study. Cronbach Alpha and test-retest analysis were used for reliability. The internal consistency coefficient of Croanbach Alpha was 0.90 and the test-retest correlation coefficient was calculated as 0.87. The Croanbach Alpha value was found to be 0.86 for the first dimension, 0.71 for the second dimension and 0.72 for the third dimension. Test-repeat correlation values were 0.83 for the first dimension, 0.75 for the second dimension and 0.75 for the third dimension. Considering the reliability analysis results, it can be stated that the scale is a reliable measurement tool. The factor structure of the scale was tested with confirmatory factor analysis; values of fit indices ($\chi 2/df= 4.71$, RMSEA =0.7, RMR=0.07, SRMR=0.06, AGFI=0.89, GFI=0.92 and CFI=0.91) and item factor loads showed that the three-factor structure of the scale was confirmed for this study group.

2.3. Data Analysis

Within the scope of the research, statistical analysis for the data obtained from Personal Information Form and Scale of Parental Attitude for Extracurricular Sportive Activities were performed with SPSS 20 statistical package program. Descriptive statistics (frequency, arithmetic mean, standard deviation), t test, one way variance analysis (ANOVA), Tukey multiple comparison and Pearson Correlation tests were used as a statistical method in the evaluation of data. Skewness and Kurtosis (normal distribution status of data) values, normal distribution curve and Levene (equality of variances) test results were evaluated to examine whether the data met the prerequisites of parametric tests (Büyüköztürk, 2012). Cronbach Alpha internal consistency coefficients and test-retest correlations were calculated to determine the reliability of the scale and confirmatory factor analysis was performed by using AMOS 22 program to test the validity of the scale.

3. FINDINGS

In this section, the results of the analysis of the mean score obtained from the extracurricular sportive activity scale in terms of some variables are given. The distribution values obtained from the measurement tool are given in Table 1.

	Item Number	n	x	Sd	Skew-ness	Kurto-sis	Min	Max
Personal Develop-ment	11	772	4.01	0.64	-0.86	0.97	1.64	5.00
Academic Percep-tion	3	772	3.61	0.93	-0.41	-0.32	1.00	5.00
Social Support	3	772	3.75	0.83	-0.74	0.26	1.00	5.00
Scale (Total)	17	772	3.89	0.64	-0.72	0.72	1.47	5.00

Table 1. Attitude Scale Score Distributions

The arithmetic mean score of the participants in the study was 3.89 and the standard deviation was 0.64 for the scores obtained from the Scale of Parental Attitude for Participation in Extracurricular Sport Activities. When the scale scores were analyzed on the basis of factors, it was seen that the lowest mean score was in Academic Perception dimension (3.61) and the highest score was in Personal Development dimension (4.01). The lowest score of the participants from the scale is 1.47 and the highest score is 5.00. When the skewness and kurtosis values of the scores taken from total scale and sub-dimensions are analyzed, it can be said that the data shows normal distribution.

Age	1 (n=200)		2 (n=269)		3 (n=175)		4 (n=128)				
	x	sd	x	sd	x	Sd	x	sd	F	p	SD
Personal Devel-opment	4.00	0.61	4.04	0.65	3.96	0.68	4.01	0.63	0.46	0.71	
Academic Per-ception	3.54	0.94	3.65	0.89	3.65	1.01	3.59	0.91	0.61	0.61	
Social Support	3.78	0.79	3.77	0.80	3.66	0.90	3.76	0.85	0.83	0.48	
Scale (Total)	3.88	0.60	3.92	0.64	3.85	0.69	3.89	0.62	0.41	0.75	

SD: Significant Difference Groups: 1: 35-40, 2: 41-45, 3: 46-50, 4: 51 and above

Table 2. ANOVA Results to Determine Whether Attitude Scale Scores vary according to Parents' Age

ANOVA results show that scores obtained from the Scale of Parental Attitude towards Participation in Extracurricular Sportive Activities ($F_{3.768}=0.41$, $p>0.05$) and the sub-dimensions of Personal Development ($F_{3.768}=0.46$, $p>0.05$), Academic Perception ($F_{3.768}=0.61$, $p> 0.05$) and Social Support ($F_{3.768}=0.83$, $p>0.05$) did not differ significantly according to the age of parents. According to this finding, the difference between the mean of the scores obtained from the scale and the sub-dimensions is not statistically significant according to parental age.

Profession	1 (n=200)		2 (n=125)		3 (n=196)		4 (n=97)		5 (n=154)				
	x	sd	x	sd	x	Sd	x	Sd	x	Sd	F	p	MD
Personal Development	4.07	0.66	3.86	0.67	4.07	0.57	3.92	0.67	4.01	0.64	3.11	0.02	1-2 3-2
Academic Perception	3.80	0.85	3.47	0.99	3.63	0.95	3.38	0.92	3.59	0.93	4.36	0.00	1-2 1-4
Social Support	3.87	0.77	3.56	0.84	3.79	0.79	3.57	0.99	3.79	0.80	4.08	0.00	1-2 1-2,4
Scale (Total)	3.99	0.63	3.74	0.66	3.95	0.58	3.76	0.70	3.89	0.63	4.37	0.00	3-2

MD: Meaning Difference, Groups: 1: Officer, 2: Worker, 3: Housewife, 4: Freelance, 5: Other

Table 3. ANOVA Results to Determine Whether Attitude Scale Scores differ according to Parents' Profession

ANOVA results show that scores obtained from the Scale of Parental Attitude towards Participation in Extracurricular Sportive Activities (F_4, 767=4.37, p<0.01) and the sub-dimensions of Personal Development (F_4,767=3.11, p<0.05), Academic Perception (F_4, 767=4.36, p<0.01) and Social Support (F_4,767=4.08, p<0.01) differed significantly according to the age of parents. When the scores obtained from the total scale are examined, it was determined that the scores of the participants who were officers were statistically higher than the scores of the participants who were workers and those who were in the self-employment groups, and that the scores of the participants who were housewives were statistically higher than the scores of the participants who were workers. In the sub-dimension of *Personal Development*, the scores of the participants who were workers were found to be statistically lower than the scores of those who were officers and those who were housewives. In the *Academic Perception* sub-dimension, while the scores of the participants who were officers were found to be statistically higher than the scores of the participants who were workers and those who were in the self-employment groups, in the *Social Support* sub-dimension, it was found that the scores of the participants who were officers were higher than the scores of the participants who were workers.

	Number of Children		
	N	r	p
Personal Development	772	-0.12	0.00
Academic Perception	772	-0.06	0.09
Social Support	772	-0.13	0.00
Scale (Total)	772	-0.12	0.00

Table 4. Correlation Test Results to Determine Whether There Is Any Significant Relationship between Attitude Scale Scores and the Number of Children That Parents Have

The correlation coefficients between the scores of the participants from the Scale of Parental Attitudes Towards Participation in Sportive Activities and the number of children of the parents show that there is a negative and low level significant relationship ($p<0.01$) between the number of children and the scores obtained from the total scale and Personal Development and Social Support sub-dimensions. In other words, as the number of children increases, attitude scores decrease.

Status of Doing Sports	**Doing Sports (n=171)**		**Not Doing Sports (n=601)**			
	x	sd	x	sd	t	p
Personal Development	4.22	0.58	3.94	0.65	5.09	0.00
Academic Perception	3.85	0.92	3.54	0.93	3.86	0.00
Social Support	4.04	0.68	3.66	0.85	6.06	0.00
Scale (Total)	4.13	0.58	3.82	0.64	5.59	0.00

Table 5. t-Test Results to Determine Whether Attitude Scale Scores differ according to Parents' Status of Doing Sports

ANOVA results show that scores obtained from the Scale of Parental Attitude towards Participation in Extracurricular Sportive Activities ($t=5.59$, $p<0.01$) and the sub-dimensions of *Personal Development* ($t=5.09$, $p<0.01$), *Academic Perception* ($t=3.86$, $p<0.01$) and *Social Support* ($t=6.06$, $p<0.01$) differed significantly according to the parents' status of doing sports. According to this finding, the mean scores of the parents engaged in sports are higher than the scores of the parents who do not do sports in the total scale and all sub-dimensions. In other words, parents doing sports have higher attitude scores.

Perceived Academic Achievement Status	**Low-Medium (n=510)**		**High (n=262)**			
	x	sd	x	sd	t	p
Personal Development	3.99	0.67	4.04	0.59	1.04	0.30
Academic Perception	3.57	0.93	3.69	0.93	1.72	0.09
Social Support	3.72	0.84	3.79	0.81	1.13	0.26
Scale (Total)	3.87	0.66	3.93	0.58	1.38	0.17

Table 6. t-Test Results to Determine Whether Attitude Scale Scores differ according to Students' Perceived Academic Achievement Status

ANOVA results show that scores obtained from the Scale of Parental Attitude towards Participation in Extracurricular Sportive Activities ($t=1.38$, $p>0.05$) and the sub-dimensions of *Personal Development* ($t=1.04$, $p>0.05$), *Academic Perception* ($t=1.72$, $p>0.05$) and *Social Support* ($t=1.13$, $p>0.05$) differed significantly according to Students' Perceived Academic Achievement Status. In other words, the difference between the participants who perceived the academic achievement status as low-medium and the participants who perceived the academic achievement status as high were not statistically significant.

4. DISCUSSION

In the study which examined parental attitudes for participation of high school students in extracurricular sportive activities, the mean score of the parents towards extracurricular sportive activities was 3.89 ± 0.64 for the overall scale. For sub-dimensions, this value varies between 3.61±0.93 and 4.01±0.64. Considering that the mean scores that can be taken from the measurement tool vary between 1 and 5, it can be said that the attitudes of the parents towards the extracurricular sports activities are above the average. This finding is in parallel with the findings obtained of the study by Yılmaz (2018a). Positive parental attitudes towards extracurricular sportive activities can be explained as that parents have the awareness about the benefits of these activities to the children and thus they show the attitudes and behavior in line with this (Yılmaz, 2016; Yılmaz, 2018b).

When the general and sub-dimensions of the scale of parental attitude for extracurricular sportive activities were examined according to the age variable, no statistically significant difference was found between the age groups in the overall scale and the sub-dimensions of the scale (Table 2). The age variable does not make a difference on the attitudes of parents towards extracurricular sports activities. In the study of Yılmaz (2016), the findings obtained from the parents of different age groups showed that parents have a positive point of view for extracurricular sports activities. Extracurricular sports activities are considered important by the parents at every age level for the development of their children and support their children to participate in these activities. There are studies emphasizing the importance of support and encouragement of each parent for the participation of children in these activities. Anderson et al. (2003) revealed in the study on the children's participation in extracurricular sports activities, family support and pressure that parents' support, regardless of the age level, contributes positively to children's participation in extracurricular sports activities and that parental pressure had negative consequences on children's participation in these activities.

The results of the analysis of another sub-problem that includes whether parents' attitudes towards extracurricular sportive activities differed according to their professional status revealed a significant relationship between these two variables. It was also found that there was a significant relationship between the educational status of the parents and their attitude scores towards the extracurricular sportive activities, as well as between the professional status of the parents and their attitude scores towards the extracurricular sportive activities. It was determined that mothers who are officers have more positive attitudes than those who are housewives, and that fathers who are officers have a more positive attitude than those who are workers. As in the case of educational status variable, it is seen that parents' professions are an important criterion in children's participation in these activities. Considering the parallelism between professional and educational level, it was determined in the current study that the relationship between parents' attitudes towards extracurricular sports activities and the level of education is in favor of those with high level of education, which is also in favor of the parents who are officers. These results are parallel with the study by Anderson et al. (2003) on the relationship between children's extracurricular activities, family support and pressure. In particular, it was found that mother education level was related to the level of participation of children in these activities. In addition, Altschul (2011) also included the socio-economic status variable in his study, and suggested that family income and educational status could contribute separately to student motivation. Considering that the educational status, profession and socio-economic conditions of the parents constitute a whole, it can be said that in the present study, the significant relationship between the extracurricular sports activities and the education level and profession may be similar to the socio-economic conditions of the parents.

The results of the analysis of the relationship between parents' attitudes towards extracurricular activities and the number of children they have showed that there is a negative relationship between these two variables. It was concluded that the attitude scores of the parents with fewer children from the items in the personality development, academic perception and social support dimensions were higher than. In the study by Anderson, Hughes and Fuemmeler (2009) on the parent-child attitude towards the intensity and frequency of physical activity, it was determined that the number of children parents have a role in the participation of children in sports. When this finding is taken into consideration, it can be said that as the number of children increases, attitudes towards extracurricular sports activities decrease. In the study of Yılmaz (2016), it was observed that parents with small numbers of children have a positive opinion on the participation in extracurricular activities which are important in the children's development in order for them to be educated as qualified and intellectual individuals. It was determined that they support their children's development by directing them not only to sportive activities but also to artistic, academic and performance clubs. In addition, it can be argued that the educational status of parents and socio-economic status are also among the reasons of this support. Since these activities require time and cost, financial moral obligations are imposed on parents. Therefore, it can be said that as the number of children increases, there may be some limitations on the investment they can make to their children. However, the sports history and family structure of the parents also affect the point of view of extracurricular activities. Opinions of parents with one child support this. Stating that his sports history was effective in directing his children to these activities, the parent revealed that the experiences of parents were determinants of the extracurricular activities choices of the children. As stated by the participant, the sports history, the conditions of the parents and the family structure are effective in directing the children in these activities. Therefore, it may be useful to ensure that parents participate in these activities for their children to participate in these activities. The child can feel the support of the family and achieve success in both academic and sports life. The success and failure of the child is associated by the society with the behavior of parents. When children have achieved success in sports, people believe that there is a family factor behind this success. For example, when the famous golfer Tiger Woods began to succeed in tournaments, everyone described Earl Woods, Tiger's father, as a good and intelligent parent and described him as the main support behind success. The same can be seen in the example of Richard Williams, father of Serena and Venus Williams sisters (Coakley, 2003).

The results of the analyzes conducted to determine the relationship between parental attitudes for extracurricular sports activities and their status of doing sports revealed that there was a significant relationship between these two variables and this relationship was in favor of the parents doing sports. The attitude scores of the parents who stated that they do sports are higher than the attitude scores of the parents, who do not do sports, for the general of the scale and the sub-dimensions of the scale. The fact that parents have a sports history and do sports enables them to gain a positive point of view on these activities. The study of Yılmaz (2016) supports the findings obtained from our current study. It can be said that parents are aware of the benefits these activities can provide to their children. Since they also have the opportunity to gain experience by living and doing, the information of parents engaged in sports is stated as an important factor that encourages children's participation in extracurricular sporting activities in order for sports to support their social, physical and psychological development. Particularly, family participation in these activities has positive effects on success of children and personality development. It was determined that the family closely monitored their children's participation in these activities to make them feel supported, and they also provided

control over them. Here, the effect of family participation is seen. In the extracurricular activities held abroad (Anderson et al., 2003; Barnett, 2008; Hoyle & Leff, 1997), the importance of family participation was emphasized, whereas in domestic studies, family participation and extracurricular sports activities were not handled together. Therefore, it can be said that families do not have sufficient knowledge about these activities. In the study of Yılmaz (2016), it was determined that parents who actively engaged in sports have a more positive attitude towards sending their children to these activities. It was determined that in order to send their children to these activities, the parents reconcile with each other or with the other children's parents participating in these activities and took their children to the long distance training area. In the study of Kotan, Hergüner & Yaman (2009) on the effect of family on the participation of athlete students in primary schools in these activities, it was seen that at least one of the members of the 61.3% of the family does sports and that 62.8% of students respond "always" to the question of "my family encourage me to do sports all the time". Considering this finding, it can be said that parental support has an effect on the participation and continuity of children in sports. The family has an influence on the selection of sports branches of the children. It was obtained in the qualitative part of the research that the parents generally directed their children to the sports branch they used to do in the past or to the sports branches which have the future and would not injure them.

Understanding whether the extracurricular sportive activity has a positive or negative social effect on academic achievement is intensively discussed with the start of research in the field of sports sociology (Coakley, 2003). There was no significant relationship between parents' perceptions on children's academic achievement and their attitudes towards extracurricular sport activities. There was the results obtained in the literature differed with the present finding (Broh, 2002; Eccles & Barber 1999; Holland and Andre, 1987; Mahoney & Cairns, 1997; Marsh & Kleitman, 2002). Since there are many studies in the literature on the relationship between academic achievement and participation in extracurricular activities, in the qualitative part of the study, parents' perspectives on the effects of extracurricular sports activities on academic achievement were examined. In the literature, it was concluded that parents were concerned that participation in these activities would hinder the academic achievement of their children. Yılmaz (2016) 's study includes parents with the opinions that extracurricular sport activities will improve the child' s academic achievement, as well as the parents who are concerned that these activities will hinder the academic achievement of their children. These parents stated that extracurricular sports activities should be arranged in such a way that they do not affect the academic achievement of their children. Some parents believe that it would be better to have these activities in the summer. The academic anxieties of the parents and their opinions that these activities should be carried out in summer rather than during the semester are included.

REFERENCES

1. Akın, F., Şimşek, O., & Erdem, T. (2007). Türkiye'de eğitim sorunu: Toplumsal aktörlerine göre eğitim sorunlarına bakış. Ankara: Türk Eğitim Sen.
2. Altschul, I. (2011). Parental involvement and the academic achievement of Mexican American Youths: What kinds of involvement in youths' education matter most? Social Work Research, 35(3), 159-170.
3. Anderman, E. M. (2002). School effects on psychological outcomes during adolescence. Journal of Educational Psychology, 94(4), 795-809.

4. Anderson, J. C., Funk, J. B., Elliott, R., & Smith, P. H. (2003). Parental support an pressure and children's extracurricular activities: Relationships with amount of involvement and affective experience of participation. Journal of Applie Developmental Psychology, 24(2), 241-257.
5. Anderson, C.B., Hughes, S.O., & Fuemmeler, B.F. (2009). Parent-child attitude congruence on type and intensity of physical activity: Testing multiple mediators of sedentary behavior in older children. Health Psychol. 28(4), 428-38.
6. Balsano, A.B. (2005). Youth civic engagement in the United States: Understanding and addressing the impact of social impediments on positive youth and community development. Applied Developmental Science, 9(4), 188-201.
7. Balyer, A., & Gündüz, Y. (2012). Effects of structured extracurricular facilities of students' academic and social development. Yakın Doğu Üniversitesi Sosyal Bilimler Dergisi, 5(2), 4-20.
8. Barber, B. L., Eccles, J. S., & Stone, M.R. (2001). Whatever happened to the jock, the brain, and the princess? Young adult pathways linked to adolescent activity involvement and social identity. Journal of Adolescent Research, 16(5), 429-455.
9. Barnett, L. A. (2008). Predicting youth participation in extracurricular recreational activities: Relationships with individual, parent, and family characteristics. Journal of Park and Recreation Administration, 26(2), 28-60.
10. Bartko, W. T., & Eccles, J. S. (2003). Adolescent participation instructured and unstructured activities: A person-oriented analysis. Journal of Youth and Adolescence, 32(4), 233-241.
11. Binbaşıoğlu, C. (2000). Okulda Ders Dışı Etkinlikler. Ankara: Milli Eğitim Bakanlığı.
12. Broh, B. A. (2002). Linking extracurricular programming to academic achievement: Who benefits and why? Sociology of Education, 75(1), 69-91.
13. Busseri, M., Rose-Krasnor, L., Wiloughby, T., & Chalmers, H. (2006). A longitudinal examination of breadth and intensity of youth activity involvement and successful development. Developmental Psychology, 42(6), 1313-1326.
14. Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. The ANNALS of the American Academy of Political and Social Science. 591, 98-124.
15. Coakley, J. (2003). Sports in society (Issues and Controversies). (Eighth Edition). Singapore.
16. Cohen, L., Manion, L., & Morrison, K. (2007) Research methods in education (The fifth Edition) New York: Routledge. www.stiba-alang.ac.id/uploadbank.pdf sayfasından erişilmiştir.
17. Daley, A. J., & Leahy, J. (2003). Self-perceptions and participation in extra-curricular physical activities. Physical Educator, 60(2), 13.
18. Darling, N. (2005). Participation in extracurricular activities and adolescent adjustment: Cross-sectional and longitudinal findings. Journal of Youth and Adolescence, 34(5), 493-505.
19. Darling, N., Caldwell, L. L., & Smith, R. (2005). Participation in school based extracurricular activities and adolescent adjustment. Journal of Leisure Research, 37(1), 51-56.
20. Drake, K. M., Longacre, M. R., MacKenzie, T., Titus, L. J., Beach, M. L., Rundle, A. G., & Dalton, M. A. (2015). High school sports programs differentially impact participation by sex. Journal of Sport and Health Science, 4(3), 282-288.

21. Dworkin, J. B., Larson, R. W., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. Journal of Youth and Adolescence, 32(1), 17-26.
22. Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? Journal of Adolescent Research, 14(1), 10–43.
23. Eccles, J. S., & Gootman, J. A. (2002). Community programs to promote youth development. Washington, DC: National Academy.
24. Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. Journal of Social Issues, 59(4), 865-889.
25. Feldman, A. F., & Matjasko, J. L. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review and future directions. Review of Educational Research, 75(2), 159-210.
26. Franklin, J. (2004, December). It takes a community: Keeping extracurricular activities available for at-risk students. Education Update, 46(8). Retrieved from http://www.ascd.org/publications/newsletters/education-update/sayfasından erişilmiştir.
27. Fredricks, J.A. (2012). Extracurricular participation and academic outcomes: Testing the over-scheduling hypothesis. Journal of Youth Adolescence, 41(3), 295-306.
28. Fredricks, J. A., & Eccles, J. S. (2005). Developmental benefits of extracurricular involvement: Do peer characteristics mediate the link between activities and youth outcomes? Journal of Youth and Adolescence, 34(6), 507-520
29. Fredricks, J. S., & Eccles, J. A. (2008). Participation in extracurricular activities in the middle school years: are there developmental benefits for African/American and European American youth? Journal of Youth Adolecence, 37(9), 1029-1043. doi: 10.1007/s10964-008-9309-4.
30. Fredricks, J. A., Alfeld, C., & Eccles. J. S. (2010). Developing and fostering passion in academic and nonacademic domains. Gifted Child Quarterly, 54(1), 18-30. doi:10.1177/0016986209352683.
31. Gerber, S. (1996). Extracurricular activities and academic achievement. Journal of Research and Development in Education, 30(1), 42-50.
32. Guest, A. M., & McRee, N. (2009). A school-level analysis of adolescent extracurricular activity, delinquency, and depression: The importance of situational context. Journal of youth and adolescence, 38(1), 51-62.
33. Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. Journal of Research on Adolescence, 13(1), 25-55
34. Holland, A., & Andre, T. (1987). Participation in extracurricular activities in secondary school: What is known, what needs to be known. Review of Educational Research, 57(4), 437-466.
35. Hoyle, R. H., & Leff, S. S. (1997). The Role of parental involvement in touth sport participation and performance. Adolescence. Spring. 32(125), 233-243.
36. Ivaniushina, V. A. & Aleksandrov, D. A. (2015) Socialization through informal education: The Extracurricular Activities of Russian Schoolchildren, Russian Education & Society, 57(4), 189-213.
37. Kremer-Sadlık, T., Izquierdo, C., & Fatiante, M. (2010). Making meaning of everyday practices: Parents' attitudes toward children's extracurricular activities in the United States and in Italy. Anthropology ve Education Quarterly, 41(1), 35-54.

38. Kotan, Ç., Hergüner, G., & Yaman, Ç. (2009). İlköğretim okullarında okuyan sporcu öğrencilerin spor yapmalarında okul ve aile faktörünün etkisi (Sakarya İli Örneği). Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 3(1), 49-58.
39. Köse, E. (2013). Eğitim kurumlarında gerçekleştirilen ders dışı etkinliklerin sınıflandırılmasına yönelik bir öneri. Uluslar arası Türkçe Edebiyat Kültür Eğitim Dergisi, 2(2), 336-353.
40. Larson, R. W., Hansen, D. M., & Moneta, G. (2006). Differing profiles of development experiences across types of organized youth activities. Developmental Psychology, 42(5), 849-863.
41. Mahoney, J. L., Larson, R. W., & Eccles, J. S. (2005). Organized activities as context of development: Extracurricular activities, after school and community programs. Psychology.
42. Mahoney, J. L., Schweder, A. E., & Stattin, H. (2002). Structured after-school activities as a moderator of depressed mood for adolescents with detached relations to their parents. Journal of Community Psychology, 30(1), 69-86.
43. Mahoney, J. L. (2000). School extracurricular activity participation as a moderator in th development of antisocial patterns. Child Development, 71(2), 502–506.
44. Mahoney, J. L., & Stattin, H., (2000). Leisure activities and adolescent antisocial behavior. The Role of structure and social context. Journal of Adolescence, 23(2), 113-127.
45. Mahoney, J. L., Cairns, B. D., & Farmer, T. W. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. Journal of Educational Psychology, 95(2), 409.
46. Marsh, H., & Kleitman, S. (2002). Extracurricular school activities: The good, the bad, and the nonlinear. Harvard Educational Review, 72(4), 464-515.
47. Marsh, H. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals? Journal of Educational Psychology, 84(4), 553-562.
48. Masia, J. R., Plaza, D. M., Gonzalez, V. H., Deltell, C. J., & Roriguez, J. C. (2013). Parental attitudes towards extracurricular physical and sports activity in school-age children. Journal of Human Sport and Exercise, 3(8), 861-876.
49. Melnick, M. J., Sabo, D. F., & Vanfossen, B. (1992). Educational effects of interscholastic athletic participation on African-American and Hispanic youth. Adolescence, 27(106), 295-308.
50. Morgan, P.J., Saunders, K.L., Lubans, D.R. (2012). Improving physical self-perception in adolescent boys from disadvantaged schools: Psychological outcomes from the Physical Activity Leaders randomized controlled trial. Pediatr Obes, 7(3), 27-32. doi: 10.1111/j.2047-6310.2012.00050.x.
51. Posner, R. A. (1995). Overcoming law. Harvard University.
52. Robert, G. A. (2007). The Effect of extracurricular activity participation on the relationship between parent involvement and academic performance in a sample of third grade children (Doctoral dissertation). Retrieved from http://proxy.kirikkale-elibrary.com/ sayfasından erişilmiştir.
53. Sarı, M. (2012). Ortaöğretim öğrencilerinin ders dışı etkinliklere katılımının incelenmesi. Kuramsal Eğitimbilim Dergisi, 5(1), 72-89.

54. Seow, P. S. & Pan, G. (2014). A Literature review of the ımpact of extracurricular activities participation on students' academic performance. Journal of Education for Business, 89(7), 361-366, doi: 10.1080/08832323.2014.912195.

55. Shannon, C.S. (2006). Parents' messages about the role of extracurricular and unstructured leisure activities: Adolescents' perceptions. Journal of Leisure Research, 38(3), 398-420.

56. Tepeköylü, Ö., & Yüksel, Y. (2010, Kasım). Ortaöğretimde sporcu öğrencilerle spor yapmayan öğrencilerin iletişim becerisi düzeyleri. 11. Uluslararası Spor Bilimleri Kongresi'nde sunulmuş bildiri, Antalya.

57. Yılmaz, A., & Güven, Ö. (2015). Ders dışı sportif etkinliklere yönelik ebeveyn tutum ölçeği. Niğde Spor Bilimleri Dergisi, 9(2), 244-258.

58. Yılmaz, A. (2016). Lise öğrencilerinin ders dışı sportif etkinliklere katılımlarına yönelik ebeveyn tutum ve görüşleri. (Yayımlanmamış Doktora tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

59. Yılmaz, A. (2018b). Parent expectations towards participation to extracurricular sport activity of high school students. Pedagogics Psychology Medical-Biological Problems of Physical Training and Sports, 22(4), 216-225.

60. Yılmaz, A. (2018a). Ebeveynlerin beden eğitimi dersi ve ders dışı sportif etkinliklere yönelik tutumları. Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 12(1), 48-64.

61. Youngs, M. E. (2008). Extracurricular activity participation and student reported sense of belongingness to school among alternative education students. (Doctoral Dissertation). Retrieved from http://proxy.kirikkale-elibrary.com/ sayfasından erişilmiştir.